Program Agenda

See the Sponsor Showcase for important information on leading LAN providers.

TURN TO INSIDE BACK COVER

8:00–9:00   **Registration and Continental Breakfast**
Take this opportunity to network with your peers and establish relationships with vendors who can aid you in reaching your LAN management goals.

9:00–9:30   **Moderator's Keynote**
Kevin Tolly will present an overview of advanced LAN technologies, creating a master plan of the business and technical issues to be addressed during the day. Critical elements that must be considered for inclusion in the next-generation LAN will be outlined providing a context for discussion of leading edge technologies such as Directory Enabled Networking, Layer 3 and 4 switching and routing, voice-data integration, Quality of Service, policy-based networking and web-enabled management. He will address the demand for greater traffic classification and the need for policy-based and advanced management applications to monitor traffic flow driven by these new functions.

9:30–10:30   **Developing the Master Plan: Bandwidth, Function and Management**
Big picture issues of connectivity, applications and management in today's LAN environment will be addressed by the vendor panel. Starting with "lower stack" issues including physical plant and cabling issues — crucial building blocks of sophisticated solutions — they will present their cases for the requisite functionality and management needed as part of an advanced LAN. Topics include QoS, security, policy-based management, directory-enabled networks, the effective use of Gigabit Ethernet, extranet and intranet applications and the support of sophisticated server farms. Case studies will offer business analysis of actual implementations.

10:30–11:00   **Break**
Product and Vendor Demonstrations I

11:00–11:30   **Developing the Master Plan: Bandwidth, Function and Management** *(Continued)*

11:30–12:00   **Roundtable Discussion**
The perfect opportunity to have your most pressing questions answered by the experts. John Gallant will lead a fast-paced and dynamic roundtable discussion between you, the panelists and Kevin Tolly covering the issues raised during the earlier presentations.

12:00–1:00   **Complimentary Lunch**
Product and Vendor Demonstrations II

1:00–1:15   **Reality Check**
Kevin Tolly will tie together the threads introduced in the earlier session and summarize the major decision points facing network managers. He will provide a reality check, helping you better understand the near- and long-term availability and viability of the various technologies under discussion.

1:15–2:30   **Implementing the Master Plan: Building and Deploying your Next-Generation LAN**
The panel will cover a solutions-oriented deployment strategy in the form of a concise case study illustrating the evolution from today's LAN to the LAN of the future. They will address the issues surrounding different vendor architectural approaches and user adoption strategies, and will cover such topics as: IP convergence, the Layer 3/Layer 4 decision, Gigabit Ethernet and ATM integration, voice-data integration and the extension of the LAN via VPNs.

2:30–3:00   **State of the LAN Roundtable**
John Gallant will lead a thought-provoking discussion that further probes the issues raised during the course of the day. He will solicit your questions and open the floor to the vendors and moderators, creating a highly interactive exchange you won't find in any other forum.

3:00   **Closing Remarks and Raffle**
Throughout the day you'll have the opportunity to enter a raffle to win a DVD player. You must be present at time of drawing to win.

Learn from the Leaders

Kevin Tolly is President and CEO of The Tolly Group, a strategic consulting, independent testing and industry analysis organization. As a leading industry consultant, he is responsible for guiding the technology decisions of major vendor and end-user organizations. The Tolly Group has evaluated virtually every important technology to appear over the past decade. Kevin also writes regularly for *Network World* and other publications, and has been widely quoted in leading business publications such as *Business Week*.

TOLLY GROUP

Kevin Tolly

John Gallant is the Editorial Director of *Network World*, one of the fastest growing publications in the computer/communications industry. With more than 15 years of experience covering the industry, Gallant sets the strategic direction for the newsweekly, which serves 164,000 network IS professionals. Under Gallant's direction, *Network World* has been a leader in covering the emergence of networking in corporate America and has become the newspaper of record in the network industry. John is a frequent speaker at conferences such as ComNet, Comdex, NetWorld+Interop and Internet World.

John Gallant

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The newsweekly of enterprise network computing

NetworkWorld

POWER PLAN

What's hot at NetWorld+ Interop '99 Atlanta. Page **47.**

IBM net gear set to go Cisco

IBM users gird for change as Cisco takes over.

BY MARC SONGINI

When it comes to installing large networks, IBM has a new message for customers: Go Cisco.

In a dramatic turn of events, IBM last week said its Networking Hardware Division (NHD) was getting out of the switching and routing business.

A number of users admit they are nervous about what type of support they will be getting from IBM as a result of the move.

One IS manager at a large

J.B. Hunt's Ken Mangold says IBM's moves will change Big Blue's role in the data center.

insurance company, who asked not to be identified, fears there will be a mass exodus of
See **IBM users**, page 85

Deal gives Cisco access to prized IBM accounts.

BY JEFF CARUSO

Last week's deal between Cisco and IBM will change the game for other network hardware vendors as Cisco consolidates its position, new competition ensues and IBM partners lose business.

After years of struggling in the network arena, IBM declared it is drastically scaling back its network business, and selling its switching and routing technology to Cisco. IBM says it will continue to sell and service SNA products, and Token Ring and Ethernet

adapters. The deal was part of a far-reaching announcement in which Cisco also agreed to buy $2 billion worth of parts and chips from IBM over the next five years.

IBM's withdrawal helps Cisco punch further into Big Blue-dominated data centers, but competitors are scouting for opportunities to steal business during the transition.

3Com and Alcatel-owned Xylan will feel the most immediate impact from the IBM decision because IBM resells gear from both companies and
See **Cisco-IBM**, page 84

Inexpensive T-1 service on tap from start-up

BY TIM GREENE

PLEASANTON, CALIF. — Tired of paying mileage for T-1 lines?

How about paying a flat $500 per month for a T-1, plus $1 per minute of use instead?

That's the deal start-up WarpSpeed Communications will introduce at NetWorld+

Interop '99 Atlanta next week with its Bandwidth@ WarpSpeed service.

Using WarpSpeed's Web site, customers can order the service and provision a T-1 in 30 seconds. They can use the line for as long as they want for $1 per minute — 50 cents per minute at night. When done,
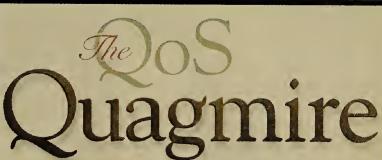See **WarpSpeed**, page 14

Hotmail hack shows risks of Web e-mail

BY CAROLYN DUFFY MARSAN

E-mail administrators are clamping down on users who send and forward messages to free Web-based e-mail services, such as Microsoft's Hotmail or Yahoo Mail. The new policies are designed to prevent exposure to e-mail security breaches, such as last week's hack of Hotmail, one of the worst on record.

Some administrators are blocking end users from forwarding messages to Web-based e-mail services, while others are filtering e-mail messages headed to those sites.
See **Hotmail**, page 16

The QoS Quagmire

Policy-based networking may be the road to IP-based QoS, but watch out for the potholes.

Products are immature, protocols are untested, and standards are still emerging.
See **QoS, page 53**

REVIEW: Network World Test Alliance member James Gaskin puts four electronic software distribution tools to the test.
See **Review, page 59**

ILLUSTRATION CYCLONE DESIGN

COMPAQ

Be up all hours? For Compaq servers, no problem. That's why so many e-businesses trust them. And why Compaq's Web server market share is 26.2% vs. Sun's 12.2% and IBM's 10.1%.* Also,

Compaq servers are peak-hour speed demons. Making customers happy and e-businesses grow. For example, after its first six months, drugstore.com® became the 7th largest e-tail site in the U.S. (according to PC Data, Inc., 6/99).

Your server is your showroom.
Are the doors always open?

Their Compaq solution (ProLiant and AlphaServer systems running Oracle8™) kept up with the growth, as did their equally scalable Compaq storage. Another good thing: as Compaq NonStop® e-Business Solutions, AlphaServer systems include a full suite of Internet management software, built in. For more, visit www.compaq.com/alwaysopen, contact your reseller or call 1-800-AT-COMPAQ.

Why Compaq?
Says drugstore.com CIO Kal Raman, "One of the big advantages of working with Compaq is the support we get. They replaced Sun platforms with a seamless integration of Compaq ProLiant running Windows NT* and AlphaServer systems running Tru64 UNIX, in record time."
Left to right: Compaq AlphaServer, Compaq ProLiant, Compaq NonStop Himalaya

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THIS WEEK ONLINE

THE CISCO-IBM DEAL

Readers react. Check out our Page 1 story about last week's events and Associate News Editor Michael Cooney's editorial (page 50), then head online with your reactions. Some readers say the move is good for IBM users, others say IBM is selling out. What do you think? **DocFinder: 4528**

Keeping Current. Fred McClimans says Cisco's takeover of IBM's Networking Hardware Division is no shocker. The only surprise is that it took so long for IBM to realize that this would be a good move. But before you take out the champagne to toast Cisco, Fred says there are some potential downsides to the deal. **DocFinder: 4536**

MORE ONLINE

Interop planning. Mark off what you want to see at NetWorld+Interop '99 Atlanta with our planner (page 47), then head online to figure out what you're going to do after-hours. We've got the Complete Outsider's Inside Guide to Atlanta to help you make the most of your stay. We've got links to restaurant guides, entertainment listings and subway maps. Heck, we've even thrown in a little Atlanta history for you. **DocFinder: 4532**

The beauty of bakeoffs. In this week's Water Cooler, Network World Fusion Managing Editor Sandra Gittlen says companies should make vendors come to them. If you're thinking about spending big bucks on products, vendors should be willing to show how their wares will stack up against other vendors' offerings. **DocFinder: 4537**

How to get onto Network World Fusion

Click on Register on the home page and follow the instructions. Subscribers, keep your NWF number — highlighted on the front cover's mailing label — handy during registration. Nonsubscribers must fill out an online registration form.

NetworkWorld

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John Yowell of Midwest Express Airlines is charged with preventing Y2K from grounding the company's airplanes. Page 66.

Special Focus

TELECOM PRICES

Catch those falling international rates. Page 34.

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The QoS Quagmire

Policy-based networking may be the road to IP-based QoS, but watch out for the potholes. Products are immature, protocols are untested, and standards are still emerging. **Page 53.**

REVIEW:

Network World Test Alliance member James Gaskin puts four electronic software distribution tools to the test. **Page 59.**

Belluzzo lands in Redmond

SGI's loss became Microsoft's gain last week when the software giant confirmed widespread rumors and named former SGI CEO Rick Belluzzo to lead its consumer and commerce group. Belluzzo, who shocked SGI last month with his abrupt resignation, will report to President Steve Ballmer and focus on Microsoft's recent push into the set-top box market. Ballmer said in a conference call last week that he expects Belluzzo to concentrate on making the television join the PC as primary tools for accessing the Internet.

The rumors are true: Belluzzo joins Microsoft's consumer and commerce group.

64-bit Windows makes debut

In the wake of giving the boot to the 64-bit Alpha processor, Microsoft last week announced a boot of a different kind. This time, Microsoft and Intel say they have successfully booted 64-bit Windows on an engineering prototype system based on Intel's Merced processor. The feat was accomplished at Intel's Developer Forum and was the first public demonstration of the technology. Microsoft contends that 64-bit Windows will offer large memory support, extensive scalability and high availability. With 64-bit Alpha processors out of the picture, the 64-bit Intel product will be the only choice for enterprise customers. Microsoft expects to ship a 64-bit operating system late next year.

A heads-up for NetWare 5 users

NetWare 5 users better make sure they back up their systems before applying Support Pack 3. Installing the support pack on some NetWare servers that have Novell Storage Services volumes configured causes the volumes to disappear after rebooting the server. When this occurs, network managers will need to recreate the volumes and restore lost data from backup. Novell is working on a fix for this problem. Further information is available at http://support.novell.com/additional/nsccd.htm://support.novell.com/csp.

Compaq's desktop gets ... compact

Compaq executives derided the idea of a thin-client desktop when the concept was being promoted three years ago. And who could blame them? Compaq and Windows PC were almost synonyms. The idea of running applications on a remote server and simply displaying the screens on the desktop was ... well, unthinkable. Not anymore, apparently.

At this week's iForum '99, a thin-client conference in Orlando, Compaq will be quietly showing off its first offering for this fast-growing market. Officials would not release details, but to win Microsoft's seal of approval, the device will have to run Windows CE and the Remote Desktop Protocol to connect to a multiuser version of NT. And to win customer approval, it will have to fit into the $500 to $700 price range. The Compaq terminal will ship later this month.

Changes at Cable & Wireless

Cable & Wireless USA will be getting a new CEO. Dennis Matteucci is stepping down, according to an internal memo sent by Mike McTighe, CEO of Cable & Wireless Global Operations, who has only been with the company for two months. Matteucci joined Cable & Wireless USA in December after retiring from CompuServe. According to McTighe's memo, Matteucci will return to retirement now that he's reached his goals as CEO of Cable & Wireless USA. The memo did not specify what those goals are. Matteucci will be acting CEO until his replacement is named later this month.

Cable & Wireless USA CEO Matteucci steps down.

Alleged Pentagon hacker arrested

The FBI and the U.S. Army Criminal Investigation Command last week worked jointly to arrest one of the founders of a hacker group called "Global Hell," 19-year-old Chad Davis of Green Bay, Wis. Davis, also known as "Mindphasr," is accused of gaining illegal access to an Army Web page and modifying its contents. Davis is also accused of hacking an unclassified Web server at the Pentagon on June 28 by exploiting a well-publicized security flaw that hadn't been patched in the Army's Cold Fusion server. Davis is also suspected of having made use of an unauthorized ISP account for two years.

ISS Group snaps up Netrex

ISS Group, the parent company of Internet Security Systems, last week announced an agreement to buy privately held system integrator Netrex Secure Solutions, based in Southfield, Mich., in a stock swap valued at $60 million. Netrex, with $21.8 million in revenue and more than 500 customers, provides managed security services, such as round-the-clock monitoring of network operations centers and electronic commerce applications.

IBM, Intel vie for net processor biz

BY DENI CONNOR

IBM last week entered the budding network processor market in a move that will take Big Blue into direct competition with Intel.

IBM will target makers of network gear and telecom equipment with its IBM Network Processor and Packet Routing switch.

Intel last week also announced the first product in its network processor family, the IXP 1200.

Network processors aim to separate the network device function from the underlying transport engine. Instead of designing custom Application Specific Integrated Circuits (ASIC) for each switch, router or WAN access device, vendors will soon be able to choose a generic microprocessor for network duties and then write application software that tells the device what to do.

Network processors will speed and simplify network equipment design to let start-ups jump into markets with less capital and allow established vendors to bring products to market faster. The processors will also let network managers eventually design upgrades to their own devices. The revenue for the network processor market will grow from more than $28 billion last year to in excess of $90 billion by 2005, according to International Business Strategies of San Jose.

IBM and Intel join a host of other companies already doing business in the communications and network processor marketplace (see graphic).

IBM has a fair chance in this market, especially against Intel, analysts say. IBM announced that it will partner with one of the start-ups in this arena, C-Port, to develop an open set of APIs, rules that will let vendors and users add functionality and enhancements to the processors.

"IBM has worked out an arrangement with C-Port to establish APIs so all chips can work together," says Frank Dzubeck, president of Communications Network Architects in Washington, D.C. "This will make life simple for everybody."

Intel is stuck with a more proprietary network processor strategy, Dzubeck says. The company hasn't issued any APIs, apparently content to keep the development of code between the processor and the ASIC to itself.

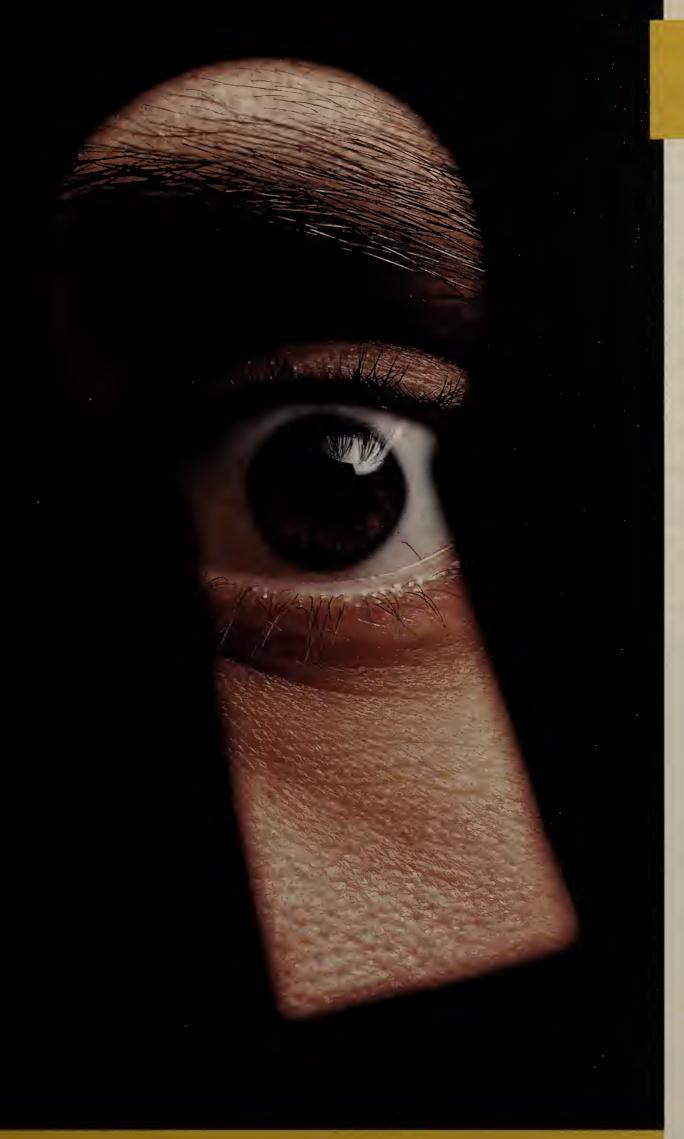IBM is also an old hand at making components and doesn't need to rely on acquir-

Who's involved?

Chip makers currently developing network communications processors:

- Agere
- Broadcom
- Conexant
- C-Port
- IBM
- Intel
- Lucent
- Maker
- MMC Networks
- Motorola
- Texas Instruments

ing technology. Over the years, it has developed strong component divisions for equipment it manufactures.

Intel, which has been on a buying spree this year, is known for acquiring needed technologies. This year, it bought Softcom Microsystems and Level One Communications, and followed those purchases with the StrongArm chip, on which the IXP 1200 is based. The chip vendor is essentially re-entering a market it abandoned two years ago. "When Intel abandoned the 960, it left a lot of hardware vendors hanging and lost a lot of friends in the industry," Dzubeck says. ▪

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Novell to overhaul FTP server

BY DENI CONNOR

PROVO, UTAH — Novell will be updating what even the company concedes is a clumsy and

NETWORLD INTEROP 99
PREVIEW

difficult-to-configure FTP server in the next version of NetWare.

The company has rewritten the File Transfer Protocol server software in NetWare 5.1 to make installation and configuration easier.

The new Novell FTP Server lets users on NetWare 5 and 5.1 networks securely transfer files from remote NetWare servers. It works with Novell Directory Services (NDS) and Novell's security and authentication services to limit user access to only data that has been approved. According to the release notes,

the Novell FTP Server also works on NetWare 4.11 networks, although Novell has not tested the FTP server and will not support it used that way.

The FTP server is capable of transferring DOS 8.3 file names and long Network File System (NFS) file names from local and remote NetWare 5 servers. NFS is the open file system Sun developed for use across Unix networks over TCP/IP.

With the new FTP server, network managers can restrict users from accessing the files of other users and host computers or specified URLs. A text file records successful logons and an intrusion-detection file tracks unsuccessful logons. An administrator-defined number of unsuccessful logon attempts will trigger a user lockout.

This new FTP server replaces a previous version included as

part of NFS Services for NetWare that consisted of several NetWare Loadable Modules (NLM) and the UNICON and UNIXLIB interfaces. The new version consists of only one NLM and a single configuration file.

Steve Howard, network ad-

NetWare 5.1 features

This Web-enabled version of NetWare uses HTTP, allowing users to get away from the proprietary NetWare Core Protocol (NCP). Other new features will include:

- An improved NetWare FTP Server
- BranchManager for NT
- Novell Directory Services 8i
- Collabra Server
- Oracle 8i
- Oracle WebDB
- IBM WebSphere

---

ministrator at the University of Florida School of Medicine in Gainesville, likes the new FTP server because it lets him consolidate management. With NFS Services, network managers need to manage FTP sessions and access from both the UNICON interface and NDS.

The Novell FTP Server also contains Trivial FTP (TFTP) support and IBM FTP protocol extensions, necessary for working with IBM's SNA. TFTP is a less capable form of FTP, in that it does not require the security of directory authentication of FTP. In addition, the FTP Server includes look-through capability, which lets a user log on to one FTP server and access files that exist on other servers in the network.
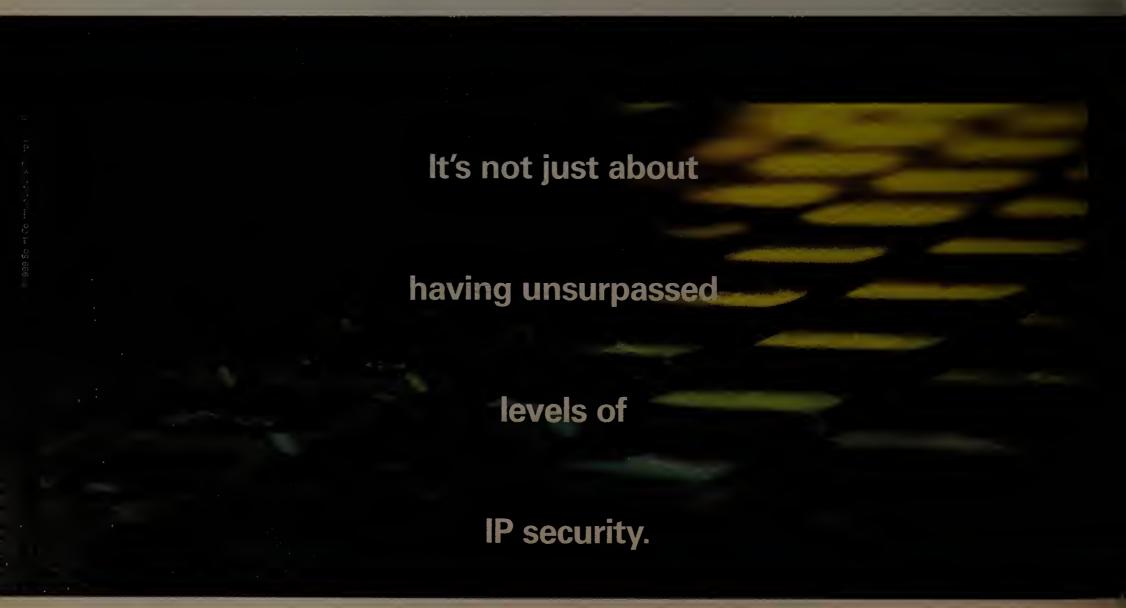
The FTP server can be managed with

NWAdmin, NetWare's universal management utility. "Any time you are setting up Web-based services, you are your own little entity. If you can start tying all your services into your naming structure and directory tree, that makes it easier for an administrator to install," says James Cimino, president of Bright Ideas, an Internet consultancy in Edison, N.J.

NetWare 5.1 will also include new versions of the Netscape Enterprise Server and Collabra Server, as well as five-user versions of Oracle8i, Oracle WebDB and IBM WebSphere. Oracle WebDB lets users create Web-enabled SQL databases. IBM WebSphere can be used to develop high-end Web applications. NetWare 5.1 will also use HTTP as a core protocol and lets users manage NetWare servers from a Web browser.

The beta versions of the FTP server can be downloaded from http://support.novell.com/beta/public. ◼

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Whether it's with your colleagues down the hall or those around the globe, sharing mission-critical data securely is imperative. As an industry leader in IP Security, Sprint offers end-to-end solutions that significantly reduce the risk of external Internet breaches as well as internal network breaches. In addition, Sprint offers unsurpassed levels of managed security, 100% managed firewall sevice

Asera to launch e-commerce service

BY CAROLYN
DUFFY MARSAN

Start-up Asera says it can get your company marketing, selling and supporting products over the Web in under 60 days.

To fulfill this bold claim, Asera is offering an outsourced electronic commerce service based on third-party and home-grown software. Unlike with competing services, Asera subscribers retain ownership of their customer data and interactions, while Asera activates and operates a customized e-commerce service for them. Asera charges set-up and transaction fees for the service.

The service will be announced Sept. 9 at an event in San Francisco celebrating Asera's official launch. Asera is an 85-person company in Redwood City, Calif., that is backed by venture capital firm Kleiner, Perkins, Caufield and Byers.

Asera's focus is helping companies interact with distributors, OEMs, value-added resellers and direct customers over the Web. Asera uses the Web to move products more quickly through sales channels. Asera has modeled its offering after the e-commerce systems used by Dell and Cisco.

"Companies in the business-to-business marketplace have been able to hook up directly with their channel via the Web," says Warren Weiss, president and CEO of Asera.

Asera customers can choose from a range of e-commerce services, including online catalogs, product configuration, order entry and order status. Asera also offers features for fostering a community among buyers, including message boards, news feeds, virtual events and auctions. All the services come together in a specially branded portal that Asera hosts and integrates into the customer's back-end transaction and enterprise resource planning systems.

Asera officials say the alternatives to their service are to build a customized e-commerce system or hire systems integrators to do it. However, "these become instant legacy systems that cannot change," Weiss says.

Plus, says Chris Hyrne, director of marketing for Asera, companies end up with "very large monolithic pieces of code. What we do is break up the service into small, little chunks so buyers can take only the pieces they need. We deliver it like the phone service, which lets a customer get up and running faster."

Asera officials say a typical $100 million company, for example, would spend about $5 million per year to build and operate an e-commerce front-end system — Asera would offer that service for $800,000.

Asera's target customers are companies with revenue in the $100 million to $1 billion range, in the fields of high-tech, telecommunications and electronics. "These companies have complex order management, configuration management, channels and service organizations," Weiss says. "They're also very interested in community."

"If you're a manufacturer, Asera can set up an extranet with your distributors very quickly. They've got a turnkey solution that's proven, can be installed quickly and requires no development time," explains Bob Chatham, senior analyst with Forrester Research. He says he has not seen another vendor offering extranet development as a monthly service.

However, Chatham points out that Asera's approach is best suited for [...] ume order management. Companies that do large volumes of business together may be better off investing in electronic data interchange systems, he says. ☑

Windows 2000 moving forward, but work remains

IBM gearing up to provide systems, software optimized for long-awaited operating system.

BY JOHN FONTANA

CARY, N.C. — Users and developers say the evolution of Windows 2000 is progressing, but Microsoft still needs to refine the software if it expects to ship the operating system by year-end.

Some users say problems remain with Active Directory and the Domain Name System (DNS) in the server editions of the operating system. And IBM, a Microsoft rival and development partner, says scalability and interoperability are still issues.

The IBM observations were made during a press briefing last week.

Users say the recent Windows 2000 Release Candidate 1 of Beta 3 is a marked improvement over the Beta 3 software sent out in April. A second version of the software is expected to ship early this month.

"Beta 3 was interesting to try and work with, but Release Candidate 1 is more stable," says Al Williams, director of distributed systems services for Pennsylvania State University's Center for Academic Computing. However, Williams says Active Directory is still rickety, as is DNS, which replaces the Windows Internet Name Service architecture for locating network computers.

"I haven't been able to build a stable system with Active Directory in order to stress test it," he says.

Williams says Windows 2000 Professional, the desktop version of the operating system, is in good shape. He is optimistic that Microsoft can work out the server kinks, but he will not deploy the software until after Year 2000 concerns pass.

Many others may make the same decision.

"Once users find out that Windows 2000 is not a simple upgrade, they will adjust their

Penn State's Williams says he hasn't been able to build a stable system with Active Directory.

rollout far into 2000 and beyond," predicts David Marshall, an analyst with International Data Corp., a market research firm in Framingham, Mass.

IBM believes other issues will affect deployments, especially the integration of Windows 2000 with existing systems. IBM this month will begin to provide integration and scalability options. The

company plans to tap its knowledge of high-end systems to optimize hardware and software for Windows 2000.

IBM later this month will release Cornhusker, which supports eight-node Intel clusters. The technology borrows heavily from IBM's SP2 switch technology for RS/6000 clusters. IBM also plans to introduce a new two-way Netfinity server (see story, below).

But IBM's Patrick Gibney, director of Windows 2000 systems, is especially critical of Microsoft's message that symmetric multiprocessing will translate into scalability.

"If you think you will run multiple apps on one eight-way box, you will be disappointed in performance," Gibney says, referring to Windows 2000 Advanced Server. He adds that without applications specifically designed for eight-way processing, performance gains are suspect.

IBM officials say they will

address the integration issues they see with Active Directory, security and Microsoft Management Console. Gibney says those products are all geared for a homogeneous Windows platform.

To combat that, IBM plans to develop its middleware products to support both IBM's architectures, especially its e-business Application Framework, and Windows 2000. For example, IBM will support Microsoft's Component Object Model as well as Enterprise Java Beans in its middleware products.

IBM plans to have more than 300 middleware, development and systems management tools available to run on Windows 2000 the day the software ships.

It also plans to have 250 hardware systems from desktops to servers certified to run the operating system, and will offer free upgrades to the desktop version of Windows 2000. ◼

More breaking news

Network World Fusion now has more news than ever. Check out these stories online:

Bell Atlantic, AT&T lock horns again over long-distance

Bell Atlantic is looking for permission to do long-distance, but its former owner, AT&T, is trying to block the efforts. According to AT&T, Bell Atlantic has not done a good enough job opening up the local market.
DocFinder: 4538

Get your news here!

NetFlash delivers network news to your e-mail inbox every day, free of charge. And it includes occasional flashes of wit. Sign up today, sit back and let the news come to you.

DocFinder: 3850

Sun to offer Star Division applications for free

Last week Sun announced plans to offer the StarOffice productivity suite over the Web. Microsoft countered the announcement by disclosing that it has plans to offer Office the same way. Unlike Sun, Microsoft offered few details.
DocFinder: 4539

Spectrum licenses directory from Sun-Netscape

Cabletron last week cut a deal with the Sun-Netscape Alliance that will let Cabletron add a Lightweight Directory Access Protocol directory to its Spectrum policy management tool.
DocFinder: 4540

NETFINITY TO SUPPORT WIN 2000

IBM this month will add a server and management tools optimized to support Windows 2000 to its Netfinity server line.

At the end of this month, IBM plans to unveil Netfinity 5600, an Intel-based server optimized for Windows 2000 applications, file, print or Web services. The Pentium III two-way symmetric multiprocessing server will come in two models and will feature an option to upgrade to Intel's forthcoming 133-MHz front-end bus.

The Intel 133-MHz bus will boost performance, although Intel has yet to say by how much. The server also features a clustering option based on IBM's SP2 switching technology.

"For the Server and Advanced editions of Windows 2000, users should get quality performance on this box," says Amir Ahari, an analyst at International Data Corp. "If they don't, it will show that Microsoft has problems with its software."

Ahari says IBM's move to optimize a server for Windows 2000 will likely be followed by all hardware vendors.

IBM's 5600 line will support Active PCI,

which allows users to replace failed adapter cards on the fly. The 5600 also comes with Light Path Diagnostics, a series of LED lights within the server chassis that illuminate to highlight failed parts.

"This is the harbinger to the next generation of industry standard servers," says Brendan Paget, Netfinity product manager for IBM. Pricing starts at $3,400, and the clustering option costs $10,000.

IBM also is adding a new management tool, called Netfinity Director, across the server line. Netfinity Director will replace the existing Netfinity Manager.

Netfinity Director supports the Common Information Model specification for standards-based management and Windows Management Instrumentation, Microsoft's implementation of the Web-based Enterprise Management standard. IBM will provide a series of integration modules so Director can run under IBM's Tivoli, Computer Associates' UniCenter, Microsoft's System Management Server and other management platforms.

— *John Fontana*

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Apps management blossoms

BY JEFF CARUSO

Network management software continues to move up into the applications layer, as several vendors in coming weeks will unveil tools to help net managers track applications.

At the upcoming NetWorld+ Interop '99 Atlanta, Network Associates will update its Sniffer net troubleshooting tools to monitor SAP R/3 traffic. Also at N+I, ProactiveNet will present a new version of Watch that measures response times for database and e-mail applications.

Also next week, but at the Sapphire 99 show, Envive will introduce Version 3.0 of its Service Level Suite, which includes new software for establishing a baseline of SAP R/3 performance and determining abnormal behavior based on that baseline.

And this week, System Management Arts (SMARTS), just before the N+I show (which the company will not be attending), will take the wraps off InCharge for Application Connectivity, which discovers what applications are running and determines the network or software problems that might be hampering access to them.

Applications management isn't a new concept, but suddenly software that has traditionally focused on network devices is now taking on this function, says Dennis Drogseth, senior consultant at Enterprise Management Associates in Durham, N.H.

"What isn't mature is the process for integrating this technology into a network environment," he says. Typically, the network and data center teams in a large enterprise don't talk to each other, and now "you have to start breaking down the barriers between them," Drogseth says.

One user agrees. "A lot of times, there's finger-pointing going on," says David Younoszai, enterprise management practice manager at RPM Consulting in Columbia, Md. Younoszai has worked with SMARTS' InCharge for several years and has been waiting for the company to get into applications management.

What Younoszai likes about the new product is that it gives different departments, such as applications, systems and networking, the same perspective on a problem.

As part of the new release, Network Associates' Sniffer will be able to measure end-to-end response times for SAP R/3 traffic.

The capability will be included in Sniffer 3.5, which will ship within two months of Interop.

On the ProactiveNet side, Watch 3.0 adds response-time measurement for databases and e-mail applications. Previously, it was limited to IP services such as File Transfer Protocol and tel-

net, and electronic commerce transactions. The product is shipping now for $29,900.

Meanwhile, Envive, which has focused on SAP R/3 management, will unveil software to identify potential long-term performance SAP network problems. The company's new Advisor application, part of its Service Level Suite 3.0, looks at the system's behavior over a period of time and flags behavior that appears abnormal.
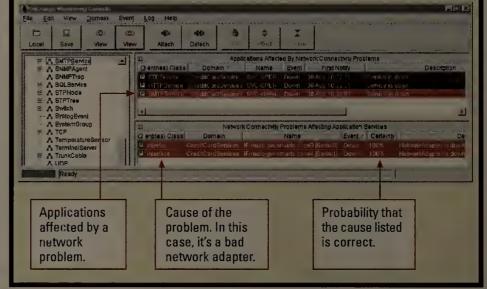
The product will ship in the fourth quarter of this year. The suite starts at $37,500, and Advisor starts at $10,000.

Finally, SMARTS, which has focused on diagnosing problems at the switching and routing levels, will now examine specific applications designated by a net manager. InCharge for Application Connectivity discovers what applications are running on servers by looking at TCP port numbers on the servers. The software ships this month starting at $35,000.

Envive: www.envive.com; Network Associates: www.nai.com; ProactiveNet: www.proactivenet.com; SMARTS: www.smarts.com

Where's the problem?

SMARTS' InCharge for Application Connectivity can tell net managers what problems are happening and how they are affecting the network.

Applications affected by a network problem.

Cause of the problem. In this case, it's a bad network adapter.

Probability that the cause listed is correct.

Caching vendors to debut new software

Radware and Network Appliance unveil performance and feature upgrades.

BY DENI CONNOR

MAHWAH, N.J. — Two Internet caching vendors, Radware and Network Appliance, will roll out new versions of their load-balancing and caching software at NetWorld+ Interop '99 Atlanta next week. The products are designed to give corporate network users faster and easier access to the Internet.

Radware will unveil Cache Server Director (CSD) 1.3, which lets net managers automatically balance Internet traffic between cache servers and redirect traffic in the event a cache server fails. Among the new features is support for the transparency function that is found in cache servers such as those from Inktomi, Novell Networks, Cacheflow and Network Appliance.

Transparency saves time because it doesn't require net administrators to make changes to each user's browser. CSD also automatically routes Web requests to an appropriate cache server and increases performance on the return path by directing 'Net content to the end user without additional intervention of CSD.

"With transparency, we can implement cache servers without ever visiting the users' desktops, thus saving a lot of time we could allocate to something else," says Ian Barraclough, senior network analyst at BMC Software in Houston. "We put CSD in the way of the Internet, and it takes care of the rest. The users don't even know they are being proxied."

BMC also uses CSD to speed performance to its intranet and the Internet for more than 6,500 network users, many in geographically disparate locations.

CSD sits between the network file server and the cache server farm and intercepts

Internet requests to Port 80, the default for HTTP traffic. In addition, it will intercept up to 20 other defined ports, including those for File Transfer Protocol (FTP) or Simple Mail Transfer Protocol (SMTP).

"The ability to accept any traffic that uses a port — SMTP, netnews, newsfeed or FTP — allows that traffic to be managed," says James Cimino, president of Bright Ideas, an Internet consultancy in Edison, N.J. "This is particularly important with Secure Socket Layer used in electronic commerce transactions. Because of encryption in SSL, its transfer is inherently slow. If you can improve that by caching, you have a lot to gain."

Radware has also added a utilization index and URL policy management to CSD. The index lets IT managers monitor how traffic and resources are being handled.

The URL policy manager provides the ability to block traffic to particular URLs and IP addresses or forward traffic

for certain content that is not logically cacheable directly to the Internet. It also allows requests for specific URLs or IP addresses to be directed to a specific cache server.

CSD 1.3 costs $7,900 and is shipping now.

NetCache upgrade

Also at Interop, Network Appliance will announce the shipment of NetCache 4.0, the software operating system for its caching appliances.

This release will include support for Network News Transfer Protocol and let IT staffers block access to newsfeeds by user, group or time of day. It will use a new scripting language or graphical user interface to limit or grant access and software from Secure Computing that contains lists of inappropriate sites.

NetCache 4.0 will ship this month with any caching device from Network Appliance. Current customers will be able to upgrade free and download the software from the company's site. The appliances start at $17,000.

Radware: www.radware.com; Network Appliance: www.networkappliance.com

customers hit the Web site again and shut down the circuit.

Through a unique relationship with AT&T, WarpSpeed can offer its service virtually anywhere in the U.S.

NETWORLD+INTEROP 99
PREVIEW

Traditional T-1s cost $500 to $1,000 per month plus an extra $20 or more fee per mile for the length of the access line. For a transcontinental T-1, the monthly bill could be $6,000 or more. So customers who need a T-1 for less than 100 hours per month might find the Warp-Speed service economical.

"I could see this as backup to a primary circuit," says Todd Inch, manager of communications for the IT division at Cotelligent, a technology consulting firm in San Francisco. The service also offers two potential advantages over traditional T-1s. First, if the number of dollars

you pay per month for mileage on your T-1 is more than the number of minutes you use the line, Bandwidth@WarpSpeed may be less expensive.

Also, an equivalent, fully meshed T-1 network requires each site to have a separate T-1 for each other site to which it wants to connect. If one site wants to connect to six others, the network needs six T-1s. If all seven sites want to connect with each other, it requires 21.

With Bandwidth@WarpSpeed, each site needs only one T-1 to access the nearest Warp-Speed point of presence.

That scenario assumes each site needs to connect with just one other site at a time and that the user doesn't need to send high-volume traffic most of the time. For high-demand client/server applications in which the timing of the demand is unpredictable, frame relay would be a better choice, Inch says.

The usefulness of Bandwidth@WarpSpeed depends on how much traffic customers

generate and whether it would save money to turn off the link when no traffic is being passed.

The technology behind the service is called the real-time resource manager, software that breathes new life into static network devices known as digital

access crosscontrol systems (DACS). DACSes are the backbone of traditional T-1 networks. But they are static; once a T-1 is set up, it is always up.
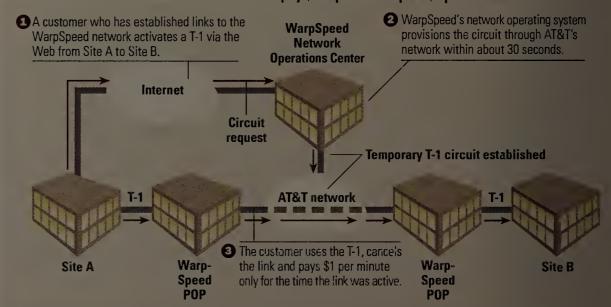
WarpSpeed initially negotiated network access rights with Teleport Communications

Group, which was later bought by AT&T.

WarpSpeed: www.warp speed.net

WarpSpeed sells T-1s by the minute

Customers can order T-1s over the Web and pay $500 per month plus $1 per minute.

❶ A customer who has established links to the WarpSpeed network activates a T-1 via the Web from Site A to Site B.

❷ WarpSpeed's network operating system provisions the circuit through AT&T's network within about 30 seconds.

WarpSpeed Network Operations Center

Internet

Circuit request

Temporary T-1 circuit established

T-1

AT&T network

T-1

❸ The customer uses the T-1, cancels the link and pays $1 per minute only for the time the link was active.

Site A

Warp-Speed POP

Warp-Speed POP

Site B

Hotmail,
continued from page 1

Companies that don't have policies about Web-based e-mail still expect users to know better than to put corporate data at risk.

Attorneys at Greenebaum, Doll and McDonald, a Louisville, Ky., firm, are allowed to forward e-mail to Web-based accounts. "But I hope they're not doing that," says Mandi Turner, who manages the firm's network services. "If they forwarded something inappropriate, it could be malpractice."

Turner recently installed TenFour's TFS Secure Messaging-Server software for e-mail virus checking and encryption. She plans to begin using the software's e-mail content filtering soon. "We'll be looking for Hotmail addresses," she says.

At the other end of the spectrum is Westinghouse's Anniston, Ala., plant, which blocks all messages to Hotmail, America Online and other Internet e-mail services. "We just started filtering out the Internet e-mail sites about

two months ago," says LAN manager Steve Sanders. He uses Elron Software's CommandView Internet Manager to search outgoing e-mail for key words such as "free mail" and "MSN," and then blocks those destinations.

Hotmail users were exposed to the security breach for hours before Microsoft shut down and fixed the service. The most popular free Web-based e-mail service, Hotmail has more than 40 million e-mail accounts.

Hotmail has become the

■ **"We get an occasional request from our users to forward e-mail to Hotmail. We tell them, 'Sorry, we already provide facilities for people to get e-mail while on the road.' "**

Dale Cybela, senior consultant, eFunds

The security risks of Web-based e-mail came to the forefront last week when a design flaw in Hotmail was exploited by hackers. The hackers set up Web sites that allowed anyone to open a Hotmail user's account without a password, read or delete that person's messages or send messages under that person's name.

preferred alternative e-mail address for corporate America. Whether it's for job hunting, sending off-color jokes, distributing the football pool or chatting with family members, Hotmail is where executives send and receive the e-mail messages they don't want seen at work. What makes Hotmail so popular is that messages can be easily accessed over the Internet from the office, home or on the road.

"Hotmail is used by all of the executives who have grown tired of roaming software and firewalls. When they're travelling, they just forward everything to a Hotmail account so they can go to an Internet cafe or a friend's computer and access their e-mail," says Eric Arnum, a consultant with e-mail outsourcer United Messaging. "E-mail administrators need to recognize that as a giant gaping hole in their security."

Hotmail also has some legitimate uses in the enterprise: backup and testing corporate e-mail systems and serving as a spam repository, for example.

"I use my Hotmail account for spam. I redirect it to that account," says Dale Seavey, senior manager of the Global Strategic Application Technology Group at Cisco.

"We use Hotmail to test our Internet connections," says David Byrkit, e-mail administrator for ITT Avionics in Clifton, N.J. "Almost all of us in the IT area keep Hotmail accounts in case we're called upon to see if the connectivity is working."

The challenge for e-mail

administrators is setting up policies that allow benign uses of Web-based e-mail services while protecting companies from exposure through these nonsecure sites. Entertainment giant 20th Century Fox has reached a compromise by allowing traffic to Web-based e-mail services but monitoring that traffic with content-filtering software.

"We see a tremendous amount of traffic going across the network to Hotmail, AOL and Yahoo," says Jeff Uslan, manager of information protection at the film studio. He uses Elron Software's CommandView Internet Manager to search outgoing and incoming e-mail for words that might indicate proprietary or inappropriate content. "We don't want information sent out about our latest movie or our latest star being signed," Uslan says. "We have to protect our intellectual property."

Meanwhile, ITT Avionics keeps all its sensitive e-mail on a classified network that has no connection to the Internet. All other e-mail can be sent out over the Internet without restriction, Byrkit says.

"We haven't been terribly concerned about any security issues with respect to using Hotmail or any other ISP-based mail system," Byrkit says. "We have a lot of mail that has to go to the Internet. We have to be very careful about restricting that in any way."

Others, however, are just saying no.

"We get an occasional request from our users to forward e-mail to Hotmail," says Dale Cybela, a senior consultant with eFunds, a Milwaukee-based provider of electronic payment services. "We tell them, 'Sorry, we already provide facilities for people to get e-mail while on the road.' " ☒

TIPS FOR BLOCKING WEB-BASED E-MAIL

mployee use of Web-based e-mail services can put sensitive company information at risk, according to e-mail experts who recommend that administrators put policies in place to restrict usage of these services.

Here are some of their tips:

● Stop end users from forwarding e-mail to these services. You can do this by preventing users from autoforwarding their messages from corporate e-mail systems, such as Lotus Notes or Microsoft Exchange. You can also add e-mail security software that lets you block outgoing e-mail to certain addresses.

● Install content filtering software to monitor outgoing e-mail for sensitive words and phrases such as "merger," "acquisition," "business plan" or "budget." Companies that offer this software include Worldtalk in Santa Clara, Calif., TenFour in Chantilly, Va., and Content Technologies in Kirkland, Wash.

● Block large e-mail attachments from leaving your network, as these may contain sensitive documents.

● Use end-to-end encryption on all messages headed out over the Internet.

● Provide a secure and simple means for employees to access their corporate e-mail while on the road.

● Establish and enforce a company policy for what information can be sent over the Internet.

— *Carolyn Duffy Marsan*

UTOPIA

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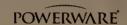
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Packeteer brings SNA reliability to IP

PacketShaper offering delivers class of service, performance monitoring features.

BY MARC SONGINI
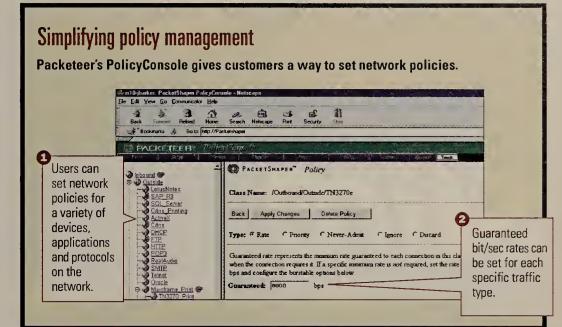
Packeteer is rolling out software for its PacketShaper device that promises to give time-sensitive, transaction-oriented IP traffic the same quality of service (QoS) previously available only with SNA networks.

The company's PacketShaper box has been outfitted with Web-enabled host access support and promises to deliver SNA QoS features, such as session-level class of service and response-time monitoring, to IP WANs. PacketShaper can recognize and classify up to 150 different types of Web-to-host traffic, including tn3270, tn5250 and 3270/5250-to-HTML emulation, Packeteer claims.

The product will help SNA users migrating to an IP network who don't want to sacrifice their SNA reliability and levels of service, Packeteer says. The company has established relationships with Web-to-host vendors, such as OpenConnect, Esker, Attachmate and others, to help PacketShaper optimize its Web-to-host traffic control schemes, says Todd Krautkremer, Packeteer vice president.

A PacketShaper device, which is about the size of a VCR, sits between an Ethernet LAN and an IP router. From this vantage point, the device reads and classifies all the traffic types going in and out of the net, such as tn3270, tn5250,

Simplifying policy management

Packeteer's PolicyConsole gives customers a way to set network policies.

1 Users can set network policies for a variety of devices, applications and protocols on the network.

2 Guaranteed bit/sec rates can be set for each specific traffic type.

tn3287 print sessions and so on, Krautkremer says.

IS staff members use the browser-based PolicyConsole to configure the PacketShaper and implement policy, which is enforced by the Packeteer TCP Rate Control technology. This feature communicates with the servers and clients across the WAN and limits how much traffic they release into the network. The idea is to control congestion by not letting one type of traffic overwhelm another. PacketShaper can prioritize traffic based on the application; for instance, the device will guarantee that a user executing a crucial business transaction gets access to more bandwidth than a user who is just browsing the Web.

PacketShaper has worked well for one Kansas City enterprise net customer running tn3270 sessions to users in South America. Hoechst Marion Roussel, a pharmaceutical business, needs to ensure its roughly 1,000 tn3270 users get priority to their applications, says Tom Clark, a senior analyst at the company. After the two-day installation of PacketShaper, he saw a 30% increase in the performance of the tn3270 network.

The PacketShaper with Web-enabled host access support is available now in three models, all supporting different WAN speed connections. The 1000 series, which handles traffic at speeds up to 384K bit/sec, costs $4,000; the 2000 series, which manages bandwidth on T-1/E-1 connections, sells for $8,000; and the 4000 series, which supports T-3/E-3 links, is priced at $16,000.

Packeteer : www.packeteer.com

AvantGo server eases handheld access to enterprise applications

BY JASON MESERVE

AvantGo this week will release a new software server that should make it easier for users of Windows CE and PalmOS devices to access enterprise network resources.

AvantGo Enterprise 3 serves up data from client/server applications in addition to standard HTML-based Web pages. The company has beefed up the server by adding load balancing and support for the Linux and Sun Solaris platforms. Previous versions of the server ran on Windows NT and could only support

Web applications, says Rob Meinhardt, director of marketing at AvantGo in San Mateo, Calif.

The AvantGo Enterprise 3 server acts as a proxy between a handheld device and the company's Internet server, client/server applications and databases.

Using a C-based, server-side API, IT staffs can build connections between enterprise applications or between record-level data sources and a handheld device. The server can also make direct connections to databases through Microsoft's Open Database Connectivity.

sure
we're fast, dependable and responsive.

For Panama Canal, upgrade to ATM net ensures smooth sailing

BY JEFF CARUSO

The Panama Canal has never been about doing things on a small scale, and its network is no exception.

With the transition from U.S. control of the canal to Panamanian authority looming at year-end, the Panama Canal Commission has spent more than $1.3 million on equipment to make its network more efficient and robust. The upgrade, much of which was installed about 18 months ago, includes nine carrier-grade ATM switches from FORE Systems to carry the organization's voice, data and video traffic over the same infrastructure.

Although ATM hasn't been as popular as Ethernet technologies in many enterprise campuses, it fit the bill for an organization that made convergence a priority.

"We found that ATM was the most promising technology, based on the fact that it could combine all three kinds of traffic on a single network," says Jorge Ruiz, information management engineer for the commission.

The organization expects many people to leave or retire once the canal is transferred out of U.S. hands on Dec. 31, in accordance with the Panama Canal Treaty, signed in 1977. "Bringing all of our services into a single network would allow us to have fewer people do the same work," Ruiz says.

Voice and data convergence was the first step of the upgrade. The commission connected its seven Nortel Networks PBXs, which support 10,000 phone lines along the 50-mile length of the canal, to the ATM switches. Much of the voice traffic still lies outside the ATM network, but it is being migrated to ATM, Ruiz says. The voice network interfaces with the public switched telephone network at two points, via 16 E-1 links at the northern end of the canal and two E-1 links at the southern end.

On the data side, the organization migrated from token ring to Ethernet and Fast Ethernet in order to relieve some congestion and get away from token ring's high cost, Ruiz says. The commission spent $600,000 to purchase 12 Cisco Catalyst 5500 switches, which are loaded with Fast Ethernet ports, to hook up its 3,000 PCs. The switches in turn link to the ATM core switches.
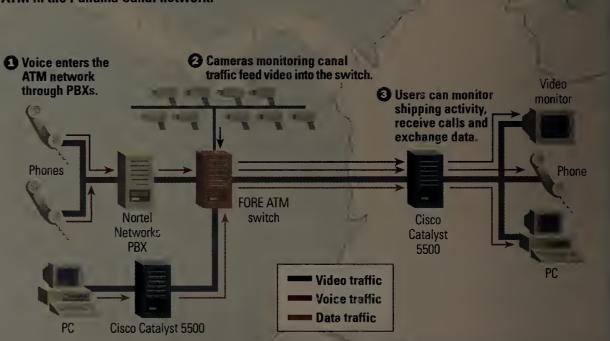
The next step will be converging the video traffic. The commission is testing some options using Motion JPEG coder/decoders and MPEG-2 coder/decoders. The idea is to connect the 30 or so cameras watching the ships along the canal into the ATM network. There are also about 120 surveillance cameras on the campus that would be hooked in, Ruiz says.

The commission runs a marine traffic control system on the network, which uses feeds from global positioning system satellites to regulate ship traffic on the canal. By monitoring the ships' positions, the commission can ensure the traffic flow is smooth, forecast traffic loads and plan canal maintenance. Other applications include accounting, inventory and project management.

Ruiz says the commission was looking for carrier-grade ATM equipment for its network core because of the size and importance of the network. With so much voice traffic, the commission needed to work with a vendor that was familiar with carrier requirements. Instead of using FORE's enterprise switches, it bought FORE's TNX 1100 switches.

Moving to ATM can be difficult because of its complexity, and Ruiz's primary advice to potential ATM users is to learn about the technology in advance.

"You need to invest a considerable amount in training and planning for the project to be successful," he says.

The Panama Canal had plenty of technical assistance from Cisco and FORE, which was a great help, Ruiz says.

In the end, though, Ruiz insists that the commission has simplified its network. One IT team can now see what's happening with all the different types of traffic because it is all running over the same infrastructure.

"More people should feel that ATM might be helpful," Ruiz says. ∎

Mass convergence

Voice, video and data travel together over ATM in the Panama Canal network.

❶ **Voice enters the ATM network through PBXs.**
❷ **Cameras monitoring canal traffic feed video into the switch.**
❸ **Users can monitor shipping activity, receive calls and exchange data.**

Phones

Nortel Networks PBX

PC

Cisco Catalyst 5500

FORE ATM switch

Cisco Catalyst 5500

Video monitor

Phone

PC

■ Video traffic
■ Voice traffic
■ Data traffic

AvantGo,

Users can connect to the Enterprise 3 server via desktop cradles that come with most handheld devices for connecting to PCs, or through direct dial, wireless connections or special kiosks.

AvantGo supports batch processing, in which the data is queued until the next time the device connects with the server, as well as real-time transactions using wireless or direct-dial connections.

Client-side support for Java-Script is now included, allowing more logic to be added to handheld applications. This lets disconnected users work without having to connect to the server for every transaction. AvantGo also enhanced security with support for Secure Sockets Layer (SSL) 3 technology.

Users can get up to 128-bit encryption between client and server.

McKessonHBOC, a pharmaceutical distribution firm based in San Francisco, is using AvantGo to help keep better track of its inventories and shipments.

The company uses ruggedized PalmOS-based devices with built-in bar code scanners from Symbol Technologies. Delivery drivers can download their daily route and delivery information into their handheld devices and then scan each package as it's delivered.

The data from the handheld device is uploaded upon return to McKesson's facility.

"We're just getting into the Internet. This lets us leverage that side of the business without having to redesign the wheel each time," says Jesse Bork, a project leader at McKesson.

Bork says he has just begun upgrading from Version 2.1 to Version 3 on two Windows NT servers.

He likes the new support for SSL and the increased performance he's seen in synchronization times. Bork also likes the server's improved integration with databases, making it easier for him to push data from McKesson's Oracle repositories down to his handheld clients.

Though he is pleased with Version 3 overall, Bork says he would like to see better administration capabilities: "Right now, AvantGo has a Web-based control feature that lets you add and delete users and groups. I would like to see that expanded."

Pricing for AvantGo Enterprise 3 starts at $150 per user.

AvantGo: www.avantgo.com

How to Contact APC

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use the extension on the reverse side

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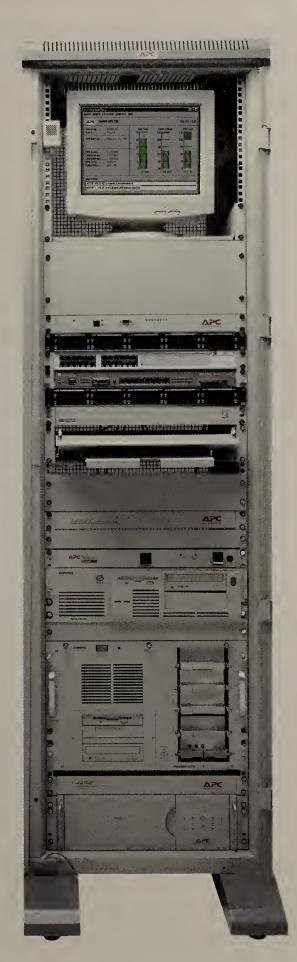
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Solid Data introduces ultrafast storage caching

BY DENI CONNOR

SANTA CLARA — Solid Data Systems has rolled out one of the first dynamic random-access memory (DRAM)-based storage systems that lets customers access network files faster by caching them for database, Internet, wireless communications or messaging applications.

Dubbed the Excellerator 800 FC, the box stores from 536M bytes up to 5.4G bytes of files in DRAM and connects directly to a Windows NT or Unix server via a Fibre Channel connection. Network managers place data that is used regularly, called hot files, on the Excellerator, where the hot files are available for almost instantaneous access.

Hot files are any high-activity files that comprise a major portion of I/O activity for the application. They may be message queues, database indexes or temporary files that may account for more than 50% of I/O operations.

The Excellerator 800 FC pulls information from a solid-state disk at memory speed, which means faster access to important data.

For instance, when a user wants to view e-mail, a request is placed to the message queue. The information is pulled from the solid-state disk of the Excellerator at close to memory speed, rather than from a slower disk. Less commonly used files are pulled from a traditional disk.

The access time of solid-state storage is measured in microseconds instead of milliseconds, as is the case with conventional disk storage, says Roger Cox, an analyst at Dataquest in San Jose.

"The main benefit is performance, since you have access to files at memory speeds. Performance is always an issue in database, Internet and messaging environments, and [Solid Data] provides a solution to that problem," Cox says.
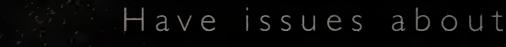
The solid-state disk market has been slow to take off, though, primarily because of concerns about price.

According to Peripheral Concepts of Santa Barbara, Calif., the cost of solid-state storage will decrease from $18 per megabyte at the end of 1998 to as little as $5 per megabyte by 2000.

Solid Data has several SCSI models and plans to introduce additional Fibre Channel models that can address up to 17G bytes of storage.

The Excellerator 800 FC works in Fibre Channel Arbitrated Loop, switch fabric and clustered server environments. The DRAM is protected in the event of power loss by a proprietary Solid Data technology. Pricing for the Excellerator 800 FC starts at $27,000, or almost $15 per megabyte.

Solid Data: www.soliddata.com

Does the

bandwidth you need

seem out of reach?

Internetworking Monitor . Kevin Tolly

SWITCH METRICS PUT VENDORS TO THE TEST

The results from two joint Network World/Tolly Group SwitchMetric testing efforts hit the street next week at NetWorld+ Interop '99 Atlanta.

Next week in *Network World* and on The Tolly Group's Web site, we'll unveil the second set of results for the 1999 Network World/Tolly Group Switch-Metric. The program's aim is to generate independent test results that validate vendor claims with regards to performance capabilities for Layer 2 and Layer 3 switches. SwitchMetric is a new benchmark to help determine the price for each gigabit per second of throughput that a switch provides.

The upshot is that nine months after we kicked off the program, companies such as Cisco, Compaq, Nortel Networks and Xylan still haven't tested their switches. Each company offers a suspect reason, which falls into two camps: a) The product is in such high demand that the company can't seem to locate a unit for testing, or b) The vendor prefers to wait for the next round of testing because it has a next-generation product in the works.

In this latest round of testing, which occurred in July and August, four vendors offered up five switches. *Network World* readers who contacted me by e-mail maintain that these tests are important. Moreover, network managers use the SwitchMetric results to independently verify vendor performance claims they find in advertising or that sales engineers lob at them. Vendors who refuse to participate lose credibility. Some users have even dropped vendors from consideration, as our report will show.

What makes it more confounding is that Network World and The Tolly Group teamed again this summer to conduct a Switch Interoperability study. Seven vendors demonstrated interoperability among 12 Gigabit Ethernet switches. The vendors were Cisco, Cabletron, Foundry Networks, Hewlett-Packard, IBM, Lucent and Nortel.

Switches were tested for autonegotiation, flow control, IP and IPX routing, IP and IPX Routing Information Protocol (RIP), standby routing protocol, accelerated convergence, link aggregation and Gigabit Ethernet uplinks. What you should note as you view the Switch Interoperability results next week is not who showed up, but what they tested. Universally, a number of vendors tested interoperability of some functions, while bunches of other vendors shied away from other tested functions.

Like the AWOL vendors in the Switch-Metric tests, the missing test data from the Switch Interoperability study should speak volumes about what vendors can and cannot accomplish from an interoperability standpoint.

Why are key industry leaders hesitant to test their products from a cost-metric viewpoint? Why are other vendors that participate in switch interoperability reluctant to test interoperability for IP and IPX routing, and IP and IPX RIP information?

As you roam the cavernous show floor in Atlanta next week, see if vendors will give you good answers or if they'll skirt the issues.

Tolly is president of The Tolly Group, a strategic consulting and independent testing firm in Manasquan, N.J. He can be reached at (732) 528-3300, ktolly@tolly.com or www.tolly.com.

The **Pennsylvania Public Utilities Commission (PUC)** has shot down **Bell Atlantic's** bid to sell long-distance service within the state. The PUC also ordered the carrier to make things easier for competitive local exchange carriers (CLEC) to do business in Pennsylvania. In particular, Bell Atlantic has to separate its wholesale and retail businesses and share its network equipment with the CLECs. Bell Atlantic says the action will hurt phone competition. The company also says the ruling plays into the hands of AT&T and other long-distance carriers that are trying to keep Bell Atlantic out of the long-distance market.

Corio, an application service provider in Redwood City, Calif., has picked **Concentric Network** as its preferred ASP infrastructure partner. Corio has been using server collocation services from Concentric for several months, but now the companies have expanded the partnership to also include secure virtual private network and application monitoring services. Corio has also used **Exodus Communications'** collocation services since Corio started offering application hosting services last year.

Corio: www.corio.com

Upstart **RC Networks** recently introduced digital subscriber line gear that uses phone wires inside a building to deliver up to 2.3M bit/sec to individual desktops. The RC8000 family of concentrators takes in eight, 16 or 32 internal phone lines and multiplexes them onto a single T-1 that connects to a service provider, such as an ISP.

The RC8008 eight-port costs $3,500, and the 16-port RC8016 costs $4,900. The RC8032 will be available by year-end and has not been priced.

RC Networks: www.rcnets.com

Interpath revs its e-commerce engines

Application service provider rolls out a quartet of hosted services.

BY DENISE PAPPALARDO

RESEARCH TRIANGLE PARK, N.C. — Interpath Communications is launching a string of electronic commerce services that let business users outsource Web sites ranging from storefronts to electronic data interchange operations.

The application service provider (ASP) is teaming with BroadVision, Netscape, Microsoft and IBM to offer a full range of e-commerce application-hosting services. The four new Interpath services include Enterprise, Trading Network, Merchant and Custom eCommerce.

Interpath's Enterprise service is based on BroadVision's One-to-One Commerce software, which runs on Sun Solaris servers. The service, priced starting at $10,000 to $15,000 per month, will be available later this month.

Konover Property Trust has been working with Interpath's customized e-commerce services since June to set up an online department store called Truefinds.com, which uses Microsoft's Site-Server technology. Konover talked with four Web-hosting companies before choosing Interpath because Interpath is providing more dedicated staff members to build, manage and maintain Truefinds.com, says Charlotte Ellis, senior vice president at the company. Konover had an added level of comfort in choosing Interpath because the service provider already hosts Konover's corporate Web site, Ellis says.

Interpath is one of the few ASPs that owns its own fiber-optic network. The net is concentrated in the southeast but extends cross-country to Chicago, San Jose and Seattle. It lets Interpath offer customers dedicated Internet, frame relay or private-line services, along with e-commerce services.
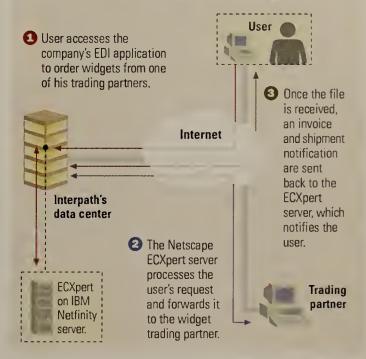
Controlling its own network will benefit Interpath when it rolls out its Trading Network Internet EDI service in mid-September. Interpath's Internet EDI service is based on Netscape's ECX-pert and TradingXpert software running on IBM Netfinity servers.

The service will let customers set up supply chain networks without having to use a value-added network service, which can be more expensive, says Steve Murray, research director at International Data Corp. in Framingham, Mass.

Trading Network lets users send secure EDI text files, such as order forms, over the Internet to a select group of trading partners (see graphic). Trading Network users also receive notification from their trading partners that the order has been received and fulfilled. Users pay a 75-cent transaction fee for files they send, but not for those they receive, says Craig Maszer, director of e-commerce at Interpath. The service also carries a $50 monthly fee.

All text messages go through a secure firewall hosted at Interpath's data center. Users can also choose to deploy VeriSign digital certificates for additional user and network authentication, Maszer says.

Interpath also has an offering for small e-commerce shops. The Interpath Merchant service is based on IBM's Net.Commerce Hosting server software and Netfinity hardware. It will be available in September for $250 per month.

Interpath is also offering a Custom eCommerce service. ShopnClik, a start-up in Raleigh, N.C., is tapping this service to set up several servers that will support add-on applications such as Nortel Networks' WebConnect. This application

Interpath's Internet EDI

Interpath's Trading Network will let business users send EDI traffic to their trading partners over the Internet at a lower cost than with traditional EDI services.

1 User accesses the company's EDI application to order widgets from one of his trading partners.

2 The Netscape ECXpert server processes the user's request and forwards it to the widget trading partner.

3 Once the file is received, an invoice and shipment notification are sent back to the ECXpert server, which notifies the user.

Interpath's data center

ECXpert on IBM Netfinity server.

Internet

User

Trading partner

BellSouth launches telecommuting service

BY TIM GREENE

ATLANTA — BellSouth is teaming with TManage to offer a service designed to take the headaches out of setting up telecommuting programs involving more than 250 people.

The companies will sell TeamTelework Connections, an offering that handles everything from phone lines for telecommuters to personality tests to determine whether employees are suited to work at home. TeamTelework will blend TManage's telecommuting expertise with BellSouth's sales force and its phone, ISDN and digital subscriber line services.

TManage, based in Austin, Texas, was founded in January 1998 by Glenn Lovelace, who helped run Nortel Networks' telecommuting network, which services 32,000 people.

TManage's service bailed out Kathy Matis, help desk manager for Deloitte-Touche in Charlotte, N.C. Sprint and Bell-South were setting up Matis' ISDN line and PBX extension for her home office but could not get them going. TManage stepped in, quickly identified the problems and got her up and running. "TManage didn't even come onsite," she says.

Customers can sign on for step-by-step advice on launching and maintaining a telecommuting program. That advice includes working through the numbers to determine whether telecommuting makes financial sense for the customer's business. It also includes meeting with the customer's IT staff to determine the best way to connect remote workers to the corporate network.

TeamTelework Connections is available now with pricing on an individual basis.

BellSouth: www.bellsouth.com; TManage: www.tmanage.com

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New integration software from IBM is helping
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To serve clients better than the competition, all Chase Global Investor Services has to do is know more than anyone else and execute flawlessly anywhere. New business integration software from IBM is helping them do just that.

In financial services, information is the raw material of new services and the bond in customer relationships – which are everything to Chase. To add value for clients, many of whom are financial leaders themselves, Chase is leveraging IT assets across business units in a dynamic new way. Instead of integrating systems one by one, they are integrating business processes from end to end with powerful new software from IBM.

This business integration software is designed to work across 100% of all systems in commercial use. At Chase, it is eliminating technology barriers among mainframes, UNIX˚ and Windows NT˚ environments, transforming Chase's custody business units everywhere into a single worldwide platform. For example, data from 83 markets and 30 external vendors is now validated automatically by MQSeries˚ Integrator as it arrives. Workflow is directed to the units best able to execute before market deadlines pass, affording Chase more time to analyze the world's financial information and apply it to the business.

As business goals evolve, the IT infrastructure is "already ready" to respond – a strategic advantage for Chase. "This allows us to stretch our imaginations," says Global Technology Executive Paula Sausville-Arthus, "to deliver really powerful solutions to the business." IBM business integration software is also stretching imaginations at companies as diverse as Toyota and Texas Instruments. You'll find their stories and others at our Web site.

For business integration case studies in different industries, InfoPack and free seminars, visit us on the Web at www.ibm.com/software/big/systems

MQSeries family

This business integration software is designed to work across 100% of all systems in commercial use with assured delivery. Message content is automatically reformatted for the needs of unlike applications.

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WebSphere Application Server extends core business functions to Web clients and vice versa. Built-in connectors to databases and other systems help meet high transaction demands on existing and future applications.

VisualAge˚ for Java™

This Java development environment enables you to quickly build secure e-business applications and extend existing information to the Web without rewriting applications from scratch.

IBM software can help you build, run and manage integrated applications across business units.

AT&T pushes into LAN management

BY DAVID ROHDE

BASKING RIDGE, N.J. — AT&T is fulfilling a promise it made last year to begin managing LANs as well as WANs. In the process, the carrier is winning outsourcing contracts at a more rapid pace than its rivals.

The latest win for the telecom giant's AT&T Solutions managed-network unit is Allied-Signal, which last month awarded AT&T Solutions a $400 million-plus contract for most of its network architecture.

Under the contract, AT&T will manage not only Allied-Signal's routers, but also its LAN hubs and switches using the Global Enterprise Management System (GEMS), a collection of off-the-shelf and proprietary management tools installed in AT&T's customer support centers.

A wide-ranging contract

AT&T will provision and manage the following for AlliedSignal:

- Frame relay and private lines
- Routers, hubs and switches
- Wireless services
- Local telephone service
- Teleconferencing services

With Version 6.0 of GEMS, AT&T began incorporating tools such as Microsoft's Systems Management Server (SMS) and Novell's ManageWise to bore down to the server level in outsourced networks.

In AlliedSignal's case, AT&T is tacking on other new capabilities, such as the local business telephone service it began providing after taking over competitive local exchange carrier Teleport last year.

AT&T Solutions president Rick Roscitt emphasizes that in these contracts, AT&T is not simply performing fault management for client companies. Rather, using the GEMS package, AT&T technicians set thresholds for CPU utilization and other network-element factors and can flag performance over a period of days to try to prevent network degradation before it happens.

GEMS is not a package that AT&T ordinarily offers directly to customers, and its capabilities are generally limited to users who sign large network management contracts. But analysts do credit AT&T Solutions with building momentum while rival carriers revamp their outsourcing strategies — such as MCI WorldCom transferring its Systemhouse unit to EDS.

"We're winning most of the large engagements," Roscitt says, pointing to other recent wins with Citibank, Bank One, McGraw-Hill and United HealthCare.

Ironically, one of the things that is less settled with the AlliedSignal contract may be on the WAN side, AT&T's traditional area of expertise.

AT&T will begin by managing AlliedSignal's frame relay and private-line networks spanning 400 sites in 19 countries, but during the course of the contract, the company will consider a more IP-centric architecture. According to Roscitt, AT&T and AlliedSignal have yet to decide whether to run IP applications over a high-speed ATM network, or move directly to an IP-over-SONET infrastructure.
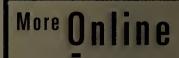
AT&T Solutions: www.att solutions.com

Interpath,

will let Web shoppers click on a button to speak with a customer service rep, says Bill Reaves, co-founder of the company.

Pricing for Interpath's Custom eCommerce service will depend on the number of servers and applications hosted.

Interpath: www.intepath.com

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Eye on the carriers . David Rohde

LUCENT FELL ON GRENADE AFTER EBBERS PULLED PIN

Lucent has been twisting itself into knots to make sure reporters understand that it is taking responsibility for the "software-related issue" that led to MCI WorldCom's recent frame relay mess. But because the same software release has been successfully installed in other frame relay networks, you have to wonder why Lucent is rending its garments over a problem that has yet to be fully explained.

Maybe it has to do with the history of two companies — Lucent and MCI WorldCom — that were built by acquisition. After all, Lucent doesn't pay huge sums of cash and stock just to get some technology and fill in market niches. A lot of the company's actions also have to do with account control.

Lucent is famously powerful in terms of selling big switches to service providers around the world. But until very recently it had two giant gaps in its list of top accounts: MCI WorldCom and Sprint. Remember, until 1996 Lucent was part of AT&T. And Sprint and the original MCI long ago became principally Nortel Networks shops for their core telephony switches, partly because they were never going to buy gear from archrival AT&T.

What's more, when the fast-packet data communications market got going about a decade ago, AT&T/Lucent passed on the opportunity, instead picking patent fights with datacom manufacturers to make up for its lack of foresight. That left the field open for frame relay and ATM switching pioneers such as Stratacom and Cascade, which eventually sold out to Cisco and Ascend, respectively.

That move allowed two more name-brand companies to muscle into not only MCI and Sprint but also the original WorldCom. Ascend gear was always a favorite with WorldCom's Internet unit, UUNET, and the Cascade switches were a key part of WorldCom's frame relay network. And when WorldCom executives took the reins in the merger with MCI, they clearly favored their platforms as the core of their unified global nets going forward.

Now you can probably see why Lucent hired former MCI Chief Information Officer Lance Boxer to head its service provider software unit and then paid $20 billion for Ascend. Yet barely six weeks after the acquisition closed, Lucent's new favorite customer, MCI WorldCom CEO Bernard Ebbers, was on the phone blaming Lucent for a 10-day foul-up in the network due to be the merged frame relay platform of the future. Then he fanned the flames by wondering if the multiple merger path — Cascade to Ascend to Lucent — meant that too much engineering talent had been lost.

Lucent is playing along, but Ebbers is wrong if he assumes he can push off this problem on a compliant and vulnerable vendor. MCI WorldCom has more problems than just this incident, which is why every customer discussion of network outages ends up moving to billing and customer-service headaches, as well. The ball is still in MCI WorldCom's court to give an explanation to why it let such a problem fester for so long — and what it says about a company that itself is suffering a merger-related talent exodus.

Rohde is a senior editor with Network World. He can be reached at drohde@nww.com.

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Catch those falling international rates

BY DAVID ROHDE

Jeff Davis isn't intimidated by the notoriously high cost of international voice and data connections. But maybe that's because he works the market like nobody's business.

Last year, the MIS director for NeXstar Pharmaceuticals in Boulder, Colo., put his international phone calls out to bid. The result: He chopped his average 50-cents-per-minute rate to 10 overseas offices to as low as 10 cents per minute to the U.K. and France under a new contract with MCI WorldCom.

Davis also put out a bid to replace an old X.25 international network. But he didn't succumb to the temptation to unify voice and data with the same carrier just for unity's sake. This time, the winner was international data specialist Infonet, which provided a hybrid IP dial-up and dedicated access network that allows all servers to be administered centrally from Boulder.

A new world

Say hello to the new world of international networks — and the type of network professional who will likely win in this new environment. After initially getting mired in the usual regulatory confusion, the European Union's January 1998 dictum that all telecom markets be open to competition began to take root toward year-end and has positively exploded this year. But experts say that users who believe the new market benefits will come to them simply by choosing one carrier or another — such as a single global alliance — are mistaken.

"You can put in an E-1 between Paris and London for probably one-tenth the cost of what it was two years ago," says H. Brian Thompson, chairman and CEO of Global TeleSystems Group, a new international carrier based in McLean, Va. But you have to leave your contract options open to take advantage of these falling rates, he says.

"I think we've come full circle," says Konnie Schaeffer, chairman and CEO of Swisscom North America. Originally, international telecommunications was too hard and expensive for many users to handle, so carriers came out with global alliances in the mid-1990s. But "the panacea that many saw in these international alliances never panned out," Schaeffer says. So now users should choose "a couple of good global vendors."

The key to the market is a wave of new national competitors in each key European market. Most European countries now have two to five carriers — other than the dominant incumbent — with the ability to provide all voice and data services. There are so many new carriers coming online around the world that the London telecom consulting firm Analysys began a Web-based service called newentrants.com that tracks more than 250 new carriers.

Some of these carriers don't necessarily look at

TELECOM PRICES

The international rate scene is changing, but some carrier offerings are incomplete.

connectivity is to buy raw bandwidth and carve out your own private network.

"We'll sell them a piece of our backbone," Thompson says. But in terms of defined data services other than Internet access, "it's still fairly rudimentary."

But those voice deals can be hard to beat — and may not even take much negotiation once you find the right players. In March, Global TeleSystems introduced a deal in its German territory that offers calls to anywhere in Europe, plus the U.S. and Canada, for 15 Eurocents per minute. (A Eurocent is

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Six unheralded new options

For users not going the global alliance route, the following new carriers are offering cut-rate deals, if not always a full range of voice and data services, in key foreign markets:

Cegetel (www.cegetel.fr)	**Colt** (www.colt-telecom.com)	**Global TeleSystems** (www.gtsgroup.com)
• Emerged from French water utility Compagnie General des Eaux.	• European CLEC co-founded by Fidelity.	• Offers pan-European network, obtained largely via acquisition.
• Includes key investments from British Telecom, SBC and Mannesmann.	• Has 2,191 buildings connected to 13 European local fiber rings.	• Is planning CLEC networks in Paris, Geneva and Berlin, followed by nine others.
• Owns 55% of AOL France and CompuServe France.	• Has network construction agreement with Level 3 to build intercity network.	• Leases raw bandwidth to end users and other carriers.

Mannesmann (www.mannesmann.de)	**Teleglobe** (www.teleglobe.com)	**Viatel** (www.viatel.com)
• German industrial and telecom concern that is buying Telecom Italia.	• Emerged from carrier with former monopoly of international traffic out of Canada.	• Owns 3,000 route-kilometer pan-European network called Circe.
• Developed and owns GSM wireless network with six million subscribers.	• Initial offer to U.S. multinationals has been with inexpensive trans-Atlantic minutes.	• Has carrier licenses in 10 European countries to compete with incumbents.
• Close relationship with Cegetel for possible pan-European venture.	• Offers specialized data and video services, such as distance learning.	• Recently bought U.S.-based carrier Destia serving residences and small businesses.

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each European country as a distinct market. The new players treat the old continent as basically a United States of Europe and try to develop a flat-rated service across the continent. For example, one new carrier called Vestia has licenses in 10 European countries, with an interconnection agreement with the incumbent carrier in each, says CEO Michael Mahoney. It has a total of 29 Nortel Networks' DMS traditional telephony switches, plus a variety of ATM and IP switches scattered across the continent with more to come.

Incomplete offerings

The only catch with many of these new types of cut-rate carriers is they generally don't offer a complete set of standard voice and data services. For example, Teleglobe, a Canadian-based rising international carrier, is skipping right over frame relay and going directly to ATM, company officials say.

Many others are taking things further, sticking with voice and making their only foray into data a pure Internet play, says Global TeleSystems' Thompson. With some of the new players, your best bet for data

currently worth about $1.05, so that rate equals about 16 cents U.S.)

In addition, the newer players will require a lot less in volume to get the best deals. One Wall Street user who asked not to be identified recently chose Teleglobe. He says he got a deal for 10 to 12 cents per minute to Western Europe with "a lot less volume" than the major carriers would have required.

You'll want to find a carrier that owns part or all of its network. The heavy price cuts at the beginning of this year were a double-edged sword for yet another category of overseas carrier: switchless resellers without their own facilities.

"It was really damaging to the switchless resellers because they had no margins to begin with," Thompson says.

"It all depends on the carrier and where it has its infrastructure," says the Wall Street user.

But the rewards are worth the risk for users who can keep up with the changing international telecom scene.

"It really is three-dimensional chess," Thompson says. ∎

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DATA

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NORTEL NETWORKS

How the world shares ideas.

How to avoid directory service headaches

Replication technology can bite users who are unaware of its limitations.

BY JOHN FONTANA

While the impending release of Microsoft's Active Directory is shedding light on the potential of directory services, a few hidden potholes lay in wait for unsuspecting network architects.

One potential problem is multimaster replication, which is embraced by Microsoft, as well as Novell Directory Services (NDS). The feature is a big plus for administration and access, but it can foster issues of data integrity.

In a multimaster system, a number of directory replicas — with which administrators can update data and users can access information — are available throughout a network. The system provides fault tolerance, reduces WAN traffic and speeds performance by keeping information close to those who need it.

But the technology raises some issues. Because data can be updated and stored in multiple places, problems with data integrity can arise when two or more administrators make changes to the same information within a replication cycle.

If data is inaccurate, applications assuming integrity can malfunction or crash. Applications that demand data integrity are best run on top of transactional databases.

But users say the multimaster risks are small compared to the benefits.

"The beauty of multimaster replication is that you can lose connectivity and still work locally," says Peter Cruishank, network architect for the U.S. Navy, which uses NDS. "The multimaster feature is why we like NDS."

Multimaster issues are minimized by the fact that directory data is updated infrequently and by the low probability that two users will change the same data at the same time. Another strategy is keeping the number of administrators low.

"A lot of administrators with a lot of privileges can wreak havoc in a multimaster system," says Dan Blum, an analyst with The Burton Group. "You can propagate a lot of damage."

Collisions between directory updates are an inherent problem in multimaster systems, according to Blum. The best way to avoid the problem is to shorten replication cycles, but that can increase network costs, he says.

Microsoft and Novell attack the problem in different ways. Active Directory uses an Update Sequence Number system, which assigns a number to each update and uses that num-

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Directory guidelines

Directories typically use a technology called multimaster replication to provide distributed administration and access. But the technology can cause problems for users who are unaware of its limitations. Here are a few guidelines for using a directory and multimaster replication:

- Use the directory to store data that is needed globally, rather than by an isolated number of users.
- Avoid storing information that requires total consistency within or between replicas.
- Keep file sizes small and use a pointer in the directory to point to large files on a file system.
- For Active Directory, attributes in the directory should be changed in intervals no more than two times the length of the replication cycle.
- Develop directory applications so inconsistent data will not cause them to crash.

HP bolsters NetMetrix management software

BY JEFF CARUSO

PALO ALTO — Hewlett-Packard last week promised to release performance monitoring software that is more scalable, better at watching WAN performance and easier for network managers to set up than the company's previous tools.

HP's upcoming OpenView NetMetrix Performance Center has several improvements over the NetMetrix products that already exist for Unix and Windows NT.

The product can now present performance data with a wider reach. Previously, NetMetrix collected data from probes scattered around a network and fed all the information to a server. Now, the probes send data to other data collectors, which in turn consolidate the information and send it to the NetMetrix database server.

Creating the intermediate step lets the product show data from more probes, says Anita Manwani, general manager of HP's NetMetrix division. That's because the NetMetrix server doesn't have to work as hard to process the data as it comes.

The upcoming product is much easier to set up and use than the previous version, says Bill Barker, an Oklahoma City-based independent network advisor for various federal agencies.

"It doesn't take a whole lot of knowledge," he says, adding that the interface has warning lights to let users know if utilization or the error rate is getting too high.

Unlike the previous version, the new tool has built-in thresholds. The software judges when link utilization is high, without a network manager telling the software ahead of time what should be considered "high."

Performance Center also brings LAN and WAN data into the same place. From one view, a net manager can see both parts of the network and tell where performance is worst. Previously, LAN and WAN information were kept separate.

OpenView NetMetrix Performance Center is expected to ship this fall, priced starting at $5,995. The server runs on NT, and the clients that access the server are Java-based.

HP: www.hp.com

Tetranet unveils tool to enforce Web site quality

BY CAROLYN
DUFFY MARSAN

Tetranet Software, a provider of Web site testing and management tools, last week unveiled software that scans Web sites with hundreds of thousands of pages and automatically produces reports on the quality of the content.

Linkbot Enterprise 1.0 is a server-based spidering tool that searches a Web site or intranet for broken links, old pages, slow pages, large documents and incorrect meta-tags. In all, the software reports on 50 areas that relate to the accuracy and status of a Web site. The package can scan through pages written in HTML 4.0 as well as JavaScript.

Linkbot Enterprise runs on a Windows 95, 98 or NT server, which doesn't have to be dedicated to the task. However, company officials say each link to be tested requires 1K byte of hard disk space; in other words, a site with a million links requires 100M bytes of space. Linkbot Enterprise can scan about

250,000 pages per day. The information about the scans is stored in an Open Database Connectivity-compatible database.

"Linkbot Enterprise is completely scalable. It can scan a limitless number of pages," says Andrew Popp, product marketing manager for Linkbot. "It also supports teams of developers. It gives users the ability to create author profiles and generate special

reports."

Linkbot Enterprise produces 15 standard reports that can be served up in HTML or as Active Server Pages, if Microsoft's Internet Information Server software is used in conjunction with

the product. The reports can be customized for particular recipients and for the frequency desired. The reports (or a URL showing where the reports are posted) can be

automatically e-mailed to recipients.

Among the software's beta testers were Boeing, which has six million links in its intranet, and Ericson Manufacturing, which has 600,000 pages in its intranet. Altogether, 15 companies participated in a seven-week beta test of the software.

Another beta-testing company was AT&T Global Services, which uses the enterprise version to manage an intranet for its sales and support staff. The company's intranet has 15,000 users and features more than 30,000 documents.

"This is really the only software package I've seen that does all of these things from a site management perspective," says Nancy Tubb, chief information officer at AT&T Global Services in Bridgewater, N.J. "When we first got it and installed it, we were cheering in the aisles."
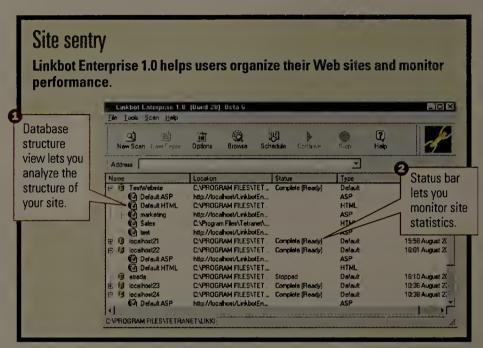
Tubb and her staff of six use Linkbot Enterprise to check for outdated documents and find broken links. Prior to testing Linkbot Enterprise, her staff used Linkbot Pro, the single-user desktop version. Tubb prefers the server-based enterprise version because it's scalable, stores reports in a database and can be scheduled to run reports overnight off the server, rather than from an individual PC.

Another feature Tubb likes is that users can program the system to check links through a firewall rather than having the links automatically show up as broken.

"As a tool to be able to clear and manage broken links, it's the best I've seen," Tubb says.

Linkbot Enterprise costs $3,995 for one author profile and comes with a copy of Linkbot Pro, Tetranet's flagship testing tool for Web sites with fewer than 100,000 links. An additional 10-user license costs $995.

Based in Ontario, Tetranet

Site sentry

Linkbot Enterprise 1.0 helps users organize their Web sites and monitor performance.

① Database structure view lets you analyze the structure of your site.

② Status bar lets you monitor site statistics.

Open Systems Solution, Cylink reinforce security packages

BY ELLEN MESSMER

Open Systems Solution is expanding the capabilities of its Private I management tool to collect and analyze traffic data from Cisco's PIX firewall and routers.

Private I Version 6.0 runs on NT or Solaris and can now collect data from Check Point Software's Firewall-1 as well as the Cisco gear.

Private I's performance has been boosted fourfold, and the package will generate 50 new types of traffic reports related to application usage as compared to the previous version, says Lynn Mormann, CEO at Open Systems.

More reports

"We're adding reports for e-mail, FTP, Web access, telnet and videoconferencing," says Mormann, listing a handful of the new applications that

Private I will now monitor. The earlier version of Private I simply reported the corporate user's IP traffic, bandwidth usage and the types of LAN/WAN attacks that may have been attempted on the firewall or router.

Open Systems — said to be one of the industry's largest resellers of the Cisco PIX firewall — developed Private I three years ago as a tool for archiving and parsing the huge volumes of syslog data the firewall generates, typically 10 to 20G bytes per day. Syslogs typically track communications through the firewall. The reports can be generated in hourly, daily or weekly intervals.

"The network administrator can now set a security policy if the corporation wants to prevent certain file types, such as attachments, from being sent onto the

Internet," Mormann says. Private I 6.0, which costs between $1,500 and $3,500, will send out an alert in the form of an e-mail or page if the policy is violated.

Cylink upgrades

In related security news, Cylink is upgrading its PrivateWire enterprise gateway for certificate-based authentication.

PrivateWire plays the role of an access-control gateway and firewall by requiring the user to prove his identity with a Cylink digital certificate before being allowed to enter a restricted area of a network. Once authenticated, all traffic is encrypted using the Triple-Data Encryption Standard.

John Marcioni, Cylink's director of technical strategy, says PrivateWire 2.0, shipping next week, will add two new capabilities.

"It will have a gateway-to-gateway feature, so you can enforce an access-control model across two separate organizations," Marcioni says.

One PrivateWire gateway will be able to establish an authenticated and encrypted virtual private network over the Internet with another PrivateWire gateway. This ability should benefit companies by giving them centralized security policy administration and management via the Internet, rather than over more expensive leased lines.

Cylink is also touting a new technology it calls Somersault, which encrypts data traffic between the TCP layer and the application layer, otherwise known

as Winsock.

"Using this instead of packet filtering means we don't have to reformat the packets, which is a lot of overhead. Plus the packets sometimes fragment en route," Marcioni says. "This is much faster encryption processing."

PrivateWire 2.0 is available now and costs $8,900 for 50 users.

Cylink: www.cylink.com; Open Systems Solution: www. 4privateI.com

Multimaster,
continued from page 37

ber to determine the most current data. Lotus Notes uses a similar approach. Novell time-stamps each update and uses the time to propagate changes.

"We acknowledge that you cannot, in practice, ensure a winner or loser for conflicting updates, unless you are accurately in sync with time," says Peter Houston, lead product manager for Active Directory. "What we do ensure is data integrity. There is zero chance in Active Directory that an attribute will have two different values."

With NDS, if server clocks are out of sync, conflicts can arise as to which server made the last update. If server clocks are so out of sync as to overlap

Tetranet,
continued from page 38

is a 3-year-old company that also sells Metabot, which automates the metatagging process, and Wisebot, which generates site maps and other navigational tools for end users.

New suite on the way

Officials at Tetranet say in October they plan to announce a full suite of Web site management tools for enterprise customers. The suite will include Linkbot Enterprise and Linkbot Pro as well as Metabot, Wisebot and soon-to-be-announced load-testing and script-testing tools.

Linkbot Enterprise competes with Microsoft's FrontPage and Allaire's HomeSite, two HTML editing packages that also offer link checking. However, these packages do not offer the other Web site management features found in Linkbot Enterprise, Tetranet's Popp says.

Web site management tools are important because they help end users save money, according to a recent Forrester Research report. The report estimated that failure to ensure Web site quality will cost the average large company more than $5 million in Web site redesigns, lost revenue, lost customers and eroded brands.

Tetranet: www.tetranetsoftware.com

replication cycles, problems can arise with data integrity.

"Our Time Sync feature ensures that all servers are basically set at the same time," says Blair Thomas, NDS marketing manager. "It's a very resilient system."

Most NDS users check critical systems daily to ensure synchronization; that is a duty Active Directory users will need to learn. Currently, NT domains use a single master system.

"Novell's Time Sync is complex and requires a lot of planning," says Neil MacDonald, an analyst with Gartner Group. "Microsoft took a pragmatic approach."

But with either approach, administrators shouldn't ignore the pitfalls as they explore the benefits of multimaster replication. ∎

'Net Insider . Scott Bradner

REINFORCING PARANOIA

The saying goes: "Just because you are paranoid doesn't mean they are not out to get you." Just about anyone remotely concerned with individual privacy is feeling justifiably paranoid these days.

It has been a while since there was much good news for anyone interested in privacy, and most of the recent news maintains this sorry trend.

Two weeks ago, the Federal Communications Commission required telecom companies to support six of the nine wiretapping powers the FBI requested. The FCC dropped the three powers that had the least impact on privacy (ttp://www.fcc.gov/Bureaus/Engineering_Technology/News_Releases/1999/nret9003.html).

The FCC did delay imposing the same requirements on providers of IP telephony, but given the agency's track record, you can expect those rules soon enough. The FBI praised the new rules as "going a long way to balance public safety, privacy and the needs of the telecommunications carriers."

Easy to say if you just got everything you wanted.

The U.S. Department of Justice is asking Congress to give it the authority to break into your house to disable encryption systems in your PC.

A federal court just ruled that the ability of a telephone company to sell your calling records (whom you called and for how long) to anyone it wants is protected by the First Amendment. In a too-rare case, the FCC was the good guy trying to restrict the practice.

Dutch researcher Herman te Riele just announced that a message encrypted in a 512-bit RSA key was decrypted using a super computer and a flock of Internet-based workstations, yet the U.S. government will not let you export technology anywhere near that strong to protect your privacy or corporate secrets.

Amazon.com for a joke added a feature that lets its users see what books are popular with its customers on a per-domain basis (for example, what people at ibm.com are buying), apparently with no thought given to the possibility that some people might see a privacy issue with the idea.

A possible ray of hope is the formation of the International Security, Trust and Privacy Alliance (http://biz.yahoo.com/prnews/990824/oh_il_istp_1.html), but nowhere in its announcement is there talk of lobbying governments to protect the security and privacy of individuals.

If lamenting the lack of privacy protection in modern society seems like a recurring theme in this column, it's because things continue to get worse.

Internet pamphleteer Dave Farber frequently signs his e-mail with a quote from Ben Franklin that expresses my worry: "They that can give up essential liberty to obtain a little temporary safety deserve neither liberty nor safety." But in this interconnected world, if you care so little for your essential liberty that you are willing to give it up, you are also giving up my liberty. And I rail against that.

Disclaimer: Harvard has seen rails come and go, but the above one is mine.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.

Technology Update

An Inside Look at the Technologies and Standards Shaping Your Network

Ask Dr. Intranet

By Steve Blass

We're using Check Point's SecuRemote software to provide virtual private network connectivity to our remote users, but we're running into difficulties with some ISP connections. Some can complete the login sequence, but then can't connect to our intranet or get any data to flow. What might be causing these problems?
Via the Internet

The ISPs are probably blocking one or more of the ports or protocols used by the Secu-Remote software. SecuRemote uses TCP Port 256 between the client and remote server to determine what hosts it can talk to and what encryption keys to use. Then it uses one of two methods to exchange keys and encrypt data: FWZ (with or without encapsulation) or Internet Key Exchange (IKE). Secu-Remote uses User Datagram Protocol (UDP) Port 259 to negotiate encryption and authentication information with FWZ, and uses UDP Port 500 with IKE.

Once the connection is complete and an encrypted session with the firewall is established, SecuRemote handles traffic in one of three ways. With FWZ, it encrypts the packet data and leaves the IP headers alone without encapsulation, or it encapsulates the encrypted packets in IP 94 packets. With IKE, it encapsulates the encrypted packets in IP 50 packets.

To solve your connectivity problems, you either have to standardize on ISPs that support your SecuRemote configuration or negotiate configuration changes with the ISPs that are blocking the traffic.

Blass is a network architect at Sprint Paranet in Houston. You can reach him at drintranet@paranet.

Web switches take heat off firewalls

BY BERT WILLIAMS

Advances in Web switching technology can do more than merely optimize Web servers — they can be applied to fix problems introduced by today's firewalls.

While firewalls are highly effective at preventing network intrusions and have become essential for delivering secure Web sites and services, all this security comes at a steep price. Simply put, firewalls can limit performance and scalability. And because they are inline devices that can be single points of failure, firewalls can reduce network availability.

is not well suited to examining high volumes of data packets. Scaling the performance of firewalls can be difficult because it generally involves a costly upgrade to a more powerful server with the most powerful processor currently available.

Emerging Web switching technology is widely viewed as a solution to scaling the capacity of firewalls and increasing the overall availability of these devices. Two Web switches are required to implement firewall load balancing; one on the clean side of the firewalls and one on the dirty side. Each Web switch directs incoming IP traffic through a firewall to its partner

when implementing a demilitarized zone (DMZ) where resources such as Internet Web servers require public access. Traffic filtering is needed to determine which packets should be sent to the DMZ and which must pass through the firewall. Off-loading this function from the firewall significantly increases firewall performance and speeds user traffic.

Web switches are configured with filters that permit or deny access to the DMZ servers. In this manner, two levels of security are implemented: one that restricts access through the use of a filter configured on the Web switch and another that restricts access through the

HOW IT WORKS

Using Web switches to load balance firewalls.

Load balancing firewalls with Web switching technology let firewalls operate in parallel and maximize performance without costly upgrades.

— **Corporate data traffic**
— **Web traffic**

Outside networks

External clients

1 Internet traffic bound for protected servers or a server in the DMZ enters the Web switch front-ending multiple firewalls.

2 The Web switch filters permit or deny access to the DMZ servers while traffic destined for protected servers is load balanced among multiple firewalls.

Web switch

DMZ

Firewalls

Static connections

DMZ servers

Secure network

3 Each Web switch port is configured with a static route to the port on a partner Web switch that connects to the same firewall, ensuring packets from the same session traverse the same firewall.

Web switch

Protected servers

Internal clients

Combining firewalls with new Web switching technology allows firewall performance, availability and scalability to be dramatically improved.

Most popular firewalls are software that is installed on a server with two network interface cards (NIC) and inserted into the data path. One NIC is connected to the public side of the network, often a router that connects to the Internet (the "dirty side" of the firewall). The other attaches to resources that must be protected (the "clean side" of the firewall).

Firewalls sit inline, so they can limit network performance and scalability because all traffic passing between the dirty and clean networks must traverse the firewall. Every packet must be examined by the firewall, which applies filtering and other predefined policies set by the network administrator.

The problem is that the processing architecture that works best for firewalls

switch on the other side. This has the effect of balancing traffic across the firewalls, allowing them to operate in parallel, scaling performance and eliminating the firewall as a single point of failure.

Unlike traditional packet switches, Web switches have the ability to maintain the state of individual TCP sessions at Fast and Gigabit Ethernet rates. Because firewalls are stateful devices, all packets associated with established sessions must traverse the same firewall. Web switches intelligently maintain state information about the traffic flowing through them, ensuring that all traffic between specific IP source/destination address pairs flows through the same firewall. This, in turn, ensures that sessions established by the firewalls are maintained for their duration.

Firewall load balancing can also be used to reduce the traffic filtering required of firewalls, a major advantage

use of stateful inspection performed by the firewalls.

To maintain high availability of firewalls, Web switches monitor firewall health by consistently pinging each configured interface on its partner Web switch through each firewall. If a firewall or Web switch interface fails, traffic is distributed across the remaining healthy Web switch interfaces and associated firewalls.

Firewall load balancing using new Web switching technology solves many of the performance and scalability problems introduced by firewalls. The technology allows firewalls to operate in parallel, maximize productivity, scale performance without major upgrades and eliminate the firewall as a single point of failure.

Williams is director of market development at Alteon WebSystems in San Jose. He can be reached at bwilliams@alteon.com.

Gearhead — inside the network machine . Mark Gibbs

PUTTING WIRELESS NETWORK POWER IN THE PALM

"Cool!" Gearhead was heard to say when a 3Com Palm VII arrived recently. The Palm VII is basically the same machine as the Palm III (2M bytes of memory, a 160-by-160 grayscale screen and an infrared port), but the thing that makes the Palm VII so amazingly cool is built-in wireless network support. Even better, the wireless services add hardly anything to the weight or size of the Palm.

Setup was very easy, taking all of 10 minutes to enter Gearhead's name and establish the wireless service account. Once Gearhead's details were registered, the wireless connection was live, Internet e-mail could be sent and received and selected Web sites could also be browsed — sort of.

The problem with Web content and the Palm is that the average Web page is just a little overweight for a device with a 2M-byte memory. For this reason, 3Com has come up with something called "Web Clipping." Web Clipping is an interesting technology that supplies lighter Web pages to ensure that only suitably sized and structured content is retrieved on a Palm.

The Palm VII comes with a number of special Web Clipping applications to give you access to all sorts of resources: Sports scores from ESPN, package tracking from Fedex, ATM locations from Bank of America and a lot more. And it is pretty simple to create your own Web Clipping applications.

Of course, Gearhead had to show off the Palm VII. At a recent company meeting, the Palm was produced with a minimum of fuss and maximum of visibility. Gearhead's colleagues responded as expected: An instant and jealous cry of "Now what toy have you got, you *&^*&^?" was heard. Score one for Gearhead. Then I received a message. Score one more.

BellSouth's Wireless data network provides the wireless service and costs $9.99 per month for a total of 50K bytes of data (roughly 250 screens of Web pages or messages). You can also pay $24.99 per month for 150K bytes of data (about 750 screens). This is reasonable pricing unless you are Gearhead's partner, Peter Mansfield, who immediately blew the entire month's allowance on researching sports scores. Thanks, Peter.

At present, the Palm VII is only being sold in New York, but should you manage to snag one, you'll find it works in most metropolitan areas.

The potential for this device in a corporate setting is considerable. It provides "step off the plane and check for urgent messages" support as well as all the personal information manager functions a busy IT person needs. There's also support for downloading your regular e-mail into the Palm through the desktop synchronization service. Unfortunately, replying is not really practical with the Palm's pen interface, so this is not so useful.

The Palm VII has a backlight that is great in very low light but less effective than you might hope in a dim room. Another issue is the desktop synchronization software: It is much less intuitive than Gearhead expected.

The combination of the Palm Desktop, the HotSync Manager, the mail setup utility, a utility called PocketMirror and an expense report utility resulted in Gearhead loading the Outlook e-mail inbox into the Palm. As there were a couple of thousand items in the inbox, this was not a good idea. Of course, Gearhead then discovered that a bulk delete function isn't available for Mail on the Palm, and the only choice on a plane trip was to sit there and delete the messages one-by-one to free up enough memory to . . . well, you see the problem.

Despite these criticisms and the rather high price (around $600), the Palm VII has a powerful role in corporate communications — and it is very cool. Gearhead awards the Palm VII eight gear teeth out of ten.

Slip some palm to gb@gibbs.com.

Spotlight

News, tips and tools from our Web site

Directory newsletter

Directory services are no longer simply a way to structure user accounts for access to corporate network resources. Choosing the right directory service, structuring it properly and adding best-of-breed, directory-enabled applications and hardware have become essential parts of an enterprise's computing infrastructure.

Electronic commerce, virtual private networks, supply-chain management and other distributed applications will not scale without a solid directory foundation. Directory-enabled, policy-based management systems will reduce the costs of managing desktop computers, network devices and other systems. Directory services will do all this and more while increasing the efficiency of the network.

Network World Fusion's Focus on Directory Services newsletter will give you the information you need to evaluate, install and maintain the right directory services products for your enterprise. Along the way, author Dave Kearns, who also pens *Network World's* "Wired Windows" column, will explain the buzzwords and acronyms. He'll cut through the fog so you'll understand the basics of the directory as well as the advanced concepts. Sign up now for this free e-mail newsletter.
DocFinder: 3850

Web favorites

Do you rely on vendor Web sites to get product information, software updates, technical help or even to place orders? If so, we're looking for your help in identifying which network vendors run the best Web sites for enterprise customers. Head online and fill out our inaugural Best Web Site survey.
DocFinder: 4531

Move over Microsoft

Last week's story "Microsoft stalls IPv6 progress" prompted readers to lash out at the software giant. They say if the company can't contribute to the protocol's progress, it should step aside.

"At first I thought Microsoft was just anticompetitive. Now between this and its dynamic-DNS, I am beginning to believe that Microsoft is trying to 'enhance' the Internet away from its competitors," one reader says.

Another writes: "The adoption of IPv6 should not have to wait on the likes of Micro$oft. Windows 2000 is late and will be later, and no one should have to wait on Micro$oft to get on board. Tell them to lead, follow or GET OUT OF THE WAY!"
DocFinder: 4529

Trimming the Fat

In this week's Help Desk, Ron Nutter addresses a reader's concerns about Fat32. The reader is attempting to install Windows NT 4.0 on a Windows 98 system, which "sadly is in Fat32."

He wants to know if there is any software available to convert a Fat32 file system into a Fat16 file system. He also is looking for tips on how to take advantage of the entire hard drive when only half has been partitioned.

Find out Nutter's suggestions and offer your own.
DocFinder: 4530

Ron Nutter is standing by to answer your network questions. Read his column every week on Fusion. *DocFinder: 2450*

www.nwfusion.com

MISSION

Keep systems running, sales selling, accounting counting and marketing doing whatever it does.

Got it / The new CEO is antsy about his first product launch. Every department is pulling together to make it all happen. If IT doesn't manage service levels— the launch sinks. But it won't. Why? They chose Tivoli IT management software. Now IT can give everyone the level of service they need. Systems, desktops and apps stay up. So marketing can launch products, sales can sell products and customers can buy products. And the CEO can relax. A little. Thanks to an end-to-end IT management solution from Tivoli Systems Inc., an IBM company. 1 888 TIVOLI-1 **www.tivoli.com/slm**

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NetworkWorld Show planner

NETWORLD+INTEROP 99

Faster speeds. Lower costs. *Better* management tools. Safer *data*. This fall's NetWorld+Interop '99 Atlanta is all about getting your *enter-* prise network pumped up and ready for the next millennium.

Taking place Sept. 13-16 at the Georgia World Congress Center, Interop will feature thousands of products from more than 500 companies and a conference program that is heavy on learning opportunities for network professionals.

Here's our guide to the activities and sessions that you won't want to miss.

Picks of the Week

Executive Interop
Sunday, *Sept. 12, through* **Tuesday,** *Sept. 14*

For senior network executives scrambling to figure out how to adapt their businesses to take advantage of the Internet, this seminar is a must. The seminar starts with a cocktail reception on Sunday, continues with sessions from 9 a.m. until 7:30 p.m. on Monday, Sept. 13, and ends with a morning panel on Tuesday, Sept. 14. Held off the show floor at the Ritz-Carleton Hotel, the Executive Interop program offers tips on how to use electronic commerce in the enterprise and case studies of successful e-businesses. Put together by The Yankee Group, the highlight of the program is a presentation by Charles Feld, chief information officer of Delta Airlines. Executive Interop costs $1,295.

Network Forensics Day
Monday, *Sept. 13, 8 a.m. to 7 p.m.*

A new feature at this Interop, Network Forensics Day is designed for network troubleshooters, application developers and network engineers who need tips for diagnosing and solving specific network-related problems. Topics on the agenda include analyzing network performance, determining application response times, detecting intrusions and improving service levels. Sprinkled throughout the day are case studies that offer practical, hands-on feedback to attendees. Free to general conference attendees, Network Forensics Day costs $595 for all others.

Highlights

Monday, Sept. 13

9 a.m. to 6 p.m.
VPN DAY
Find out about the newest virtual private network (VPN) technologies at this special one-day session, which will discuss secure remote access, secure extranets and quality of service. The program features a combination of technical presentations and product demonstrations, highlighted by the opportunity to try out the latest VPN products in the InteropNet Labs. VPN Day costs $595.

Tuesday, Sept. 14

10:15 a.m. to 11:45 a.m.
LAYERING YOUR SECURITY STRATEGY FOR MAXIMUM SAFETY
Learn how to keep your valuable corporate data safe from internal and external hackers. Panelists will discuss how you can bolster your firewalls with intrusion-detection systems, file integrity assessment and operating system scanning tools. This multilayered approach to security will be discussed by moderator Steve Schall, a security technology manager at ODS Network, and panelists Paul Ramstedt, senior research engineer at AT&T, and Greg Galford, a senior technologist at Microsoft.

2 p.m. to 3:15 p.m.
THE SUCCESSFUL DEPLOYMENT OF END-TO-END VOICE IN A PACKET NETWORK: IN PERSPECTIVE
Is packetized voice ready for prime time? Find out at this session, led by Brian MacLeod, vice president of business development for metropolitan-area and regional-area networks at Packet Engines. MacLeod will tell you how to deploy an end-to-end packetized voice service, including hardware options, service limitations and network management features.

3:30 p.m. to 4:45 p.m.
THE STATE OF INTERNET DIRECTORIES
If you want to minimize administrative tasks and maximize efficiencies across your networks, you need a sound directory strategy. Come to this session and learn how to put today's directory and directory-enabled products to work in your corporation. Moderator Daniel Blum, a senior vice president and principal consultant at The Burton Group, will be joined by panelists Russel Weisner, a vice president of engineering at Digital Signature Trust Co., and John Strassner, a chief architect of network services and management at Cisco.

Wednesday, Sept. 15

10:15 a.m. to 11:45 a.m.
A BETTER APPROACH FOR IPSEC
Find out the best way to deploy the IP Security (IPSec) standard. Learn the pros and cons of terminating IPSec at the server, router and firewall. Moderator David Piscitello, president of Core Competence, is joined by Merike Kaeo of Cisco and Peter Ford, senior manager of Internet marketing at MCI WorldCom.

11 a.m. to 12:30 p.m.
CRYSTAL BALL PANEL: PEERING INTO YOUR NETWORKED FUTURE
Being a network manager often requires the power to see into the future and predict how technology will change. Knowing what the major shifts will be can save your company a lot of money. To help you, *Network World* has gathered its top colum-

nists to offer up their predictions about the future of your network. Panelists include Mark Gibbs, author of "Gearhead" and "Backspin"; Dave Kearns, author of "Wired Windows"; Daniel Briere and Christine Heckart, authors of "Wan Monitor"; David Rohde, author of "Eye on the Carriers"; Steve Blass, author of "Dr. Intranet" and Joel Snyder, a member of the Network World Test Alliance.

Wednesday, Sept. 15

2 p.m. to 3:15 p.m.

SERVICE DIFFERENTIATION TECHNOLOGIES: IMPLEMENTING QOS/COS/TOS

How should you put together an enterprise network with the end-to-end quality of service (QoS) that your users demand? Find out about the latest QoS offerings for ATM, Ethernet and IP networks and the trade-offs for each. The moderator of this session will be Surya Panditi, president and CEO of Avici Systems. Panelists include Stan Hanks, vice president of research and technology for Enron Communications, and Vab Goel, director of IP network engineering

and advanced technologies at Qwest Communications.

3:30 p.m. to 4:45 p.m.

WHAT PARTS OF E-COMMERCE SHOULD YOU CONSIDER OUTSOURCING?

Unlike brick-and-mortar stores, where you want to own the whole operation, the best way to get an e-store up and running is often to let someone else manage some of the back-office functions. This panel of electronic commerce experts, led by consultant David Strom, looks at the pros and cons of outsourcing such functions as payment processing, Web server hosting, shopping cart management and catalog fulfillment. Panelists include Tom Saichek, director of operations at Remedy Corp., and Martin Roscheisen, CEO of eGroups.

Thursday, Sept. 16

10:15 a.m. to 11:45 a.m.

IS NT AS NETWORK-READY AS LINUX?

Windows 2000 (formerly known as Windows NT) and Linux will be pitted against each other in this session, which will discuss the pros and cons of each network operating system (NOS). Which NOS is better in terms of reliability and performance? Ask network managers who have

deployed both systems: Percy Young, manager of store systems for Burlington Coat Factory, and Michael Krieger, vice president of PC servers at Hitachi Data Systems.

12:30 p.m. to 2 p.m.

HOW FAR DO WE PUSH GIGABIT ETHERNET?

What's the future for high-speed Ethernet? Find out at this session, which features Bruce Tolley, vice chairman of events for the Gigabit Ethernet Alliance; Jonathan Thatcher, vice president of product marketing for Picolight; and Douglas Ruby, vice president of product marketing at Lucent. The presenters will talk about how Gigabit Ethernet is being deployed in LANs and metropolitan-area networks and whether it makes sense to bump up the speed of Ethernet to 10G bit/sec.

9 a.m. to 5 p.m.

VoIP DAY

This special one-day program is designed to give network managers and designers practical information and lab-based demonstrations about integrated voice and data networks. Individual sessions will cover standard telephony, digital telephony, compression and transport methods. Additional sessions will help you design and implement an integrated network that meets your company's needs. The session will be moderated

by Tom Byrnes, a principal with Byrneit. The day costs $595. If voice over IP interests you, check out the VoIP Partner Pavilion on the show floor, which will feature the latest products in this area.

Switch special

What's it going to cost you to get wire speed out of your LAN switches? Do you need to know whether competing vendors' switches will really work together on the same enterprise network? This N+I session — called LAN Switch Performance and Interoperability: Update on the State of the Art — is sponsored jointly by *Network World* and The Tolly Group. The session will offer up some insights into both of these crucial areas.

The Tolly Group/Network World 1999 Switch-Metric program has put more than 20 switches from a dozen vendors to the price/performance test. Tolly Group President Kevin Tolly and *Network World* Editorial Director John Gallant will discuss how the numbers were arrived at and how they can factor into your buying decision.

The session will run from 3 to 4 p.m. on Wed., Sept. 15, in Room 214E of the Georgia World Congress Center.

Must See

Network World's Convergence Showdown

When: *Tuesday, Sept. 14, 12:30 p.m to 2 p.m.*
Where: *Ballroom 1 of the Georgia World Congress Center.*

Forget the marketing presentations and come hear the real strategies behind network convergence at Network World's *Convergence Showdown. In this presidential-style debate, vendor executives will face tough questioning from a panel of industry experts who've heard all the convergence hype and can ferret out the truth. Vendor executives will include:*

- 3Com: Bob Roman, director, business development — emerging technologies.
- Cabletron: Romulus Pereira, chief operating officer.
- Cisco: Marthin DeBeer, a director of enterprise convergence strategy.
- Lucent: Karyn Mashima, strategy vice president and chief technical officer.
- Nortel Networks: T.J. Fitzpatrick, president of voice solutions/enterprise solutions.
- Vertical Networks: Scott Pickett, chief technology officer

Our expert panel includes *Network World* Senior Editor and showdown veteran Jim Duffy; Jim Metzler, a principal of Ashton, Metzler and Associates; and Kevin Tolly, president of The Tolly Group. The session will be moderated by *Network World* Editorial Director John Gallant.

After scrutiny from our expert panel, the vendors will question one another and the audience will get a chance to ask their own questions.

Opinions

IBM sells out

I never thought I'd see the day when IBM's Networking Hardware Division (NHD) would push its customers into Cisco's arms.

The once-vaunted network technology group all but called it quits last week by selling its routing and switching technology to archrival Cisco (see our coverage starting on page 1). That gurgling sound you heard coming from Research Triangle Park was the sound of NHD drowning in its own hyperbole.

Having followed IBM for 11 years, I have to say this move was not unexpected but still hard to take. Nothing against Cisco mind you, it had the power and cash — the company paid about $600 million for the patents and technology — to get IBM out of the way. And IBM was indeed in the way of many large accounts Cisco coveted.

Users — many dyed-in-the-wool pure IBM customers (they are still out there) — tell me they are concerned about being abandoned by IBM and bemoan the ever-decreasing amount of competition in the network arena. To borrow from Bill Clinton: I feel your pain.

In my opinion, the industry has also lost some of its character with this announcement. I already miss the IBM executives who used to threaten to "kill" or "eat our own young" before they let Cisco in the door to any of their big accounts. I guess those executives ran out of things to munch on. There were also "ominous" threats over the years by IBM to sue Cisco over alleged patent infringements (nothing ever became of those warnings).
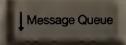
Cisco wasn't faultless. Company executives routinely accused IBM of doing nothing but "throwing up a smoke screen of confusion and fear." Sometimes screaming matches would break out between Cisco and IBM engineers at the SHARE user conference. It was fun to watch.

That said, NHD long ago relinquished control of its destiny when the group failed to comprehend IP and the router. Oh sure, IBM executives blustered and claimed the division had IP and switching technology that was every bit as good as anybody else's, but when it came time to walk the walk, IBM tripped.

In the end, NHD all but ends with a whimper. I somehow expected more than that.

What do you think? E-mail me with your thoughts.

— *Michael Cooney*
Associate news editor
mcooney@nww.com

NO TEST, NO SALE

Regarding Kevin Tolly's column "Switch testing roll call: On board or AWOL?" (July 26, page 22):

As an IS director in the process of choosing a switch, I am looking everywhere for information to help me make this decision. We are a small school district in Texas — 1,200 nodes — committed to replacing our T-1 WAN with fiber. That was more or less a no-brainer. Now what do we plug in to our fiber?

We have many considerations — video (multicast, on-demand and conferencing), voice and data — plus we have to think about the fact that we won't be upgrading our backbone en masse for at least 15 years.

Hearing that some of the manufacturers I have been considering are running away from testing is going to make me look more closely at those who embrace testing. Although no one ever got fired for buying Cisco, I need to really look at what is right for my company.

Thanks for the story, and please pass on this message to vendors: "If you are afraid to test, I am afraid to buy!"
David Haapala
Crosby, Texas

OUTAGE POSTMORTEM

Regarding your article "Frame fiasco puts heat on MCI WorldCom" (Aug. 16, page 1):

It's been little over than a year since AT&T's frame relay network experienced a long outage. The outage was caused by software upgrades to the Cisco (Stratacom) frame relay switches, which created error messages over the links, resulting in congestion and downtime. On Aug. 5, MCI WorldCom experienced a similar problem, this time involving software upgrades to Lucent (Ascend) frame relay switches.

What's really the lesson?

During mergers, service quality is in flux; processes and procedures are not well-defined as the staff is reorganized and reduced. To the customer, this upheaval can take the form of the AT&T and MCI WorldCom frame relay service problems, changes in the sales organization, the elimination of a

product/service or an increase in price.

What should customers do?

Customers need to use more than one service provider in order to find the perfect balance between discounts and service provider commitments; define realistic service-level agreements; engineer back-up options; and be aware of the technologies and equipment vendors their service providers use.
Peter Alissandratos
Vice president, Global Telecom Services
Chase Manhattan Bank
New York

MAD SLASHER

Your article "End of URLs as we know 'em?" (Aug. 9, page 1) states that URLs are made up of ". . . dots, dashes and backslashes."

Gee, where have I been? I always called that little virgule a slash when it goes from the bottom left to the upper right, and a backslash when it goes from the upper left to the lower right. Perhaps this was instilled by 18 years of Unix. Is this a new standard or, perhaps once again, is my head not on straight?
Jeph Cowan
Operator II
Scientific Computer Division
National Center for Atmospheric Research
Boulder, Colo.

WEB POLITICS

Regarding Mark Gibbs' column "Gibbs: The paragon of purity?" (Aug. 16, page 78):

So let me get this straight. Sens. Hatch and Feinstein want to make it illegal to hyperlink to pages that contain information that is perfectly legal to publish? Placing the issue of free speech aside (as those in Washington seem all too willing to do), wouldn't it be more efficient to go after the publishers of such information rather than those pointing at it? This is just another example of the ultraconservatives trying to legislate their brand of morality on the rest of us.
Keith Royster
Network administrator
North Carolina Dept. of Environment
& Natural Resources
Mooresville Regional Office
Mooresville, N.C.

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Hands-on Management

Management Mode . Jeff Shapiro

HERE'S WHAT YOU NEED TO BE A 21ST CENTURY MANAGER

What is it going to take to be an effective IT manager as we roll into the millennium? Are there skills we should have but don't? Are there skills we have but won't need? Probably yes on both counts. Let's take a look at the essential skills of a 21st century manager.

A 21st century manager is technical, but not too technical. The number of technologies we work with on a daily basis is broadening, and the amount of knowledge needed to operate effectively in each environment is deepening. Once upon a time, you could know everything about everything and thus be the obvious choice for a management position. You just can't do that any more. Instead, become an expert on one or two issues and acquire or train talent to cover the rest of the bases. If you have so small a shop that you can't cover the information you need with the staff you have, consider using consultants.

Twenty-first century managers are fast on their feet. As the saying goes, it's better to make a decision based on incomplete data than not make a decision at all. Because of the fast-moving nature of the industry, if you make a wrong decision, it does not take long to learn from — and then bury — your mistakes. But if you make no decisions, the industry is likely to bury *you*.

A 21st century manager has excellent people management skills. Attracting and retaining quality employees in this industry is harder than it has ever been. If you lose a good worker to a competitor, you may not be able to replace that person for a long time, so stay current with your employees' needs. If you can't give them salary increases, reward them in other ways, such as through additional professional training. Such a gesture says, "I respect your skills and want you to continue to enhance them. I am willing to spend money so that you can advance as an individual, and I trust you enough to believe that you will bring those skills back and help me with them, rather than my competitor."

A 21st century manager can communicate. It's great to have a vision, but if you can't communicate it to those who hold the purse strings, you're sunk before you've left the dock. Develop writing and speaking skills. If you're not comfortable speaking in front of a group, take a public speaking course. Writing takes practice, but there are shortcuts. As you read your favorite authors' works, note the stylistic items that make their voices different from others. Think about what makes you a different person and how to translate that into your writing.

All in all, a 21st century manager is a versatile, flexible person who concentrates more on building and leading teams of excellence than on individual status and accomplishments.

In the past, IT managers' personality quirks were accepted because these folks were considered "different." Today, the only acceptable IT manager is one who strives to be "better."

Shapiro is district technology coordinator for Kingsport City Schools in Tennessee. He can be reached at jshapiro@kpt.k12.tn.us.

Above the Cloud . James Kobielus

XML TO THE RESCUE

Every few years a new computing language comes along to save the world. Not long ago the messiah was Java, a language that has grabbed some important niches but has not noticeably eroded Microsoft's hegemony in the network industry. Utopian notions of Java as the "new network platform" now seem hopelessly old-fashioned.

All eyes are now on XML, a fresh canvas onto which we're mapping our fondest hopes for cross-platform application interoperability. XML stands a better chance than Java of loosening Microsoft's proprietary sway over most tiers of distributed networking. The ongoing evolution of XML standards is beyond the control of any one platform vendor, a claim that proponents of Sun's Java cannot make.

XML and related specifications, such as XML Namespaces and XML Schema, are well on the road to widespread enterprise deployment in the next three to five years. Adoption is always the sincerest form of flattery, and vendors are implementing or have implemented XML in their core product architectures.

However, no one seriously regards XML as the basis for a new operating environment, in the traditional sense of that term. Rather, XML is just a very adaptable language for defining higher-level markup "vocabularies" for various application domains. Communicating applications need not share a common development model, net protocol, operating system, database or programming language as long as they can exchange and interpret documents, messages and other objects formatted in XML. Senders and recipients of XML-formatted objects are free to process the objects as they wish, without being tightly bound to one another.

XML renders traditional platforms irrelevant. It provides a versatile language for decoupling distributed applications from their operating environments. Vendor-dominated operating environments will take a subordinate role to cross-platform services, such as directories, Web publishing and electronic commerce. And these cross-platform services will increasingly implement XML down to their cores.

Most fundamentally, XML is helping shift industry momentum away from tightly coupled computing models and toward messaging-oriented middleware (MOM). XML's emergence is contributing to a broad decline in platforms' reliance on remote procedure calls and other inter-application communication schemes, such as Distributed Component Object Model (DCOM) and Common Object Request Broker Architecture (CORBA), that bind distributed objects tightly to one another.

DCOM and CORBA will still have a role in this new order, primarily in supporting distributed applications that demand tightly coupled components in relatively homogeneous environments, such as intranets. Even here, XML will be pivotal, with software vendors increasingly relying on XML "wrapper" technology to integrate otherwise incompatible object technologies across multivendor, multiplatform environments.

There is a clear trend toward loosely coupled, platform-independent distributed applications that rely on XML metadata. We can already see the forerunners of this trend in extranet application products under development at companies such as Hewlett-Packard and Silknet. These vendors are using net directories to store and manage the complete XML-encoded workflow business logic of distributed applications, using XML-based metadata to keep tabs on database fields, security profiles and other entities. One might refer to such an application framework as an XML-based service bus. This approach received a boost from Yahoo's recent announcement that it will use HP's e-speak technology as the basis for future e-commerce services.

Integration of XML with Lightweight Directory Access Protocol Version 3 directory infrastructures, under the Directory Services Markup Language initiative, should only accelerate the trend toward using XML syntax to define directory-resident metadata pertaining to workflows, services and applications.

This all just goes to show that XML will be like oxygen in the networked environment of the 21st century: vital, pervasive and taken for granted.

Kobielus is an Alexandria, Va., analyst with The Burton Group, an IT advisory service that provides in-depth technology analysis for network planners. He can be reached at jkobielus@tbg.com. The opinions expressed are his own.

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See the future of your network at N+I Atlanta, Booth #2015.

The QoS Quagmire

◆ BY TOM STENSON

ILLUSTRATION: CYCLONE DESIGN

Convergence will live or die depending on how easy it is to implement IP-based QoS through policy-based networking. Unfortunately, policy-based networking is still a work in progress.

D o you believe in convergence? More specifically, do you believe in a new world order in which voice, data and video all travel in harmony on high-speed IP networks?

If so, you also believe in policy-based networking. Convergence will ultimately succeed or fail based on the IP community's ability to implement quality of service (QoS) in a manageable, scalable fashion — and that's what policy-based networking is all about.

A quick reality check indicates that the standards are still evolving, the protocols are untested and the products are immature. Policy-based networking won't be ready for prime time for another year or two. But it's not too early to start learning the basics of policy-based networking.

Policy: The basics

A policy defines how network resources are to be provisioned among network clients. Clients may be users, applications or hosts, and resources may be provisioned statically or dynamically based on factors such as time of day, resource utilization and client authorization rights.

A high-level policy statement, such as: "Provide Expedited Forwarding for all voice-over-IP traffic," is translated into a structured set of "if <condition(s)> then <action(s)>" rules so the policy can be stored, retrieved and interpreted by the various network components.

Unfortunately, first-generation systems generally will not interpret high-

@roll-out

Goodyear is an IBM e-business

IBM software powers the Goodyear dealer network, turning 1,200 independent businesses into a marketing juggernaut. What can IBM e-commerce software do for you?

IBM software is helping thousands of companies transform traditional business systems into powerful, flexible e-business networks. At Goodyear, a new business-to-business Web site is turning customers into partners and streamlining distribution in an historically tough industry.

The new dealer extranet, called XPLOR, makes Goodyear's vast product inventory visible and available to dealers round the clock. (A big surprise was how much business came in after traditional business hours.) IBM Net.Commerce and DB2® Universal Database™ extend Goodyear systems directly to dealers – and dealer orders directly to Goodyear distribution centers, increasing dealer satisfaction as well as sales.

The online orders are processed automatically as they come in, saving as much as a day vs. the old EDI system, and reducing errors. News of price promotions and sales trends are online instantly. Dealers know what's hot and when they'll have it. IBM and Lotus® e-business software help keep everybody on the same page, and a step ahead of competitors.

With usage expected to double next year, scalability was an issue. But not for long. IBM software gives Goodyear the foundation for years of triple-digit growth. And lower costs from the start. How *much* lower is a Goodyear secret that is locked up tight – by IBM security software. We can tell you that IBM e-business-to-business software has saved some companies nine figures in a single year. You'll find their stories and their results at our Web site.

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WebSphere Application Server extends core business functions to Web clients – and vice versa. Built-in connectors to databases and other systems help meet high transaction demands on applications.

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Enables you to market and sell in a secure and scalable way on the Internet. Award-winning software provides integrated e-commerce capabilities, from site creation to online order processing.

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IBM software can help you build, run and manage e-commerce solutions on all major platforms.

level policy statements. Instead, the systems will require the network manager to enter policies as rules, such as: "if Port = HTTP (80) then set IP Precedence = 4".

Framework under construction

One of the most promising aspects of policy-based networking is the work in progress at the Internet Engineering Task Force (IETF) to define a standard policy framework and a related set of protocols and schemas.

What has emerged is, at least on the surface, a relatively simple and elegant framework. The typical policy-based network will include:

• Policy entry console: a management tool through which the network manager defines and edits policies.

• Policy decision point (PDP): a policy server that retrieves policies from a repository and makes decisions on behalf of a Policy Enforcement Point (PEP).

• PEP: network devices, such as routers, switches and firewalls, that enforce policy decisions via access lists, queue management algorithms and other means.

• Policy repository: a Lightweight Directory Access Protocol (LDAP)-compliant directory server that stores policies.

PDPs and PEPs will talk to each other via a simple query/response protocol called Common Open Policy Service (COPS). COPS is preferred over SNMP because it is connection-oriented and reliable, and includes locking mechanisms to prevent multiple PDPs from simultaneously attempting to update the same PEP.

The framework does not specify how implementation will occur; several components could exist on a single physical server, or each may reside on its own server.

Policy rules must be represented as data structures so they can be stored and retrieved. To address this issue, the IETF's Policy Framework Working Group has defined the Policy Framework Core Information Model, which defines a high-level set of object-oriented classes that can be used for general policy representation. Object classes in the core model can be extended with subclasses to represent specific types of policies — for example, QoS or network security policies.

There is general agreement within the vendor community that policy information should be stored in an LDAP-compliant directory, so the Policy Framework Working Group has also defined a mapping of the Core Information Model into an LDAP directory schema.

The framework concepts enjoy widespread vendor support and are defined in Internet drafts in the IETF. Although none have reached request for comments (RFC) status, taken together these ideas provide a clear roadmap for how policy network systems are to be built in the future.

QoS standards

There are three QoS standards relevant to corporate networkers: Differentiated Services (Diff-Serv), Resource Reservation Protocol (RSVP) and 802.1p.

• Diff-Serv redefines how the IPv4 type-of-service (ToS) byte or IPv6 Traffic Class is used to specify a QoS requirement. Diff-Serv is backward-compatible with existing use of the IP Precedence bits in the ToS field.

Diff-Serv is intended to provide QoS for general classes of traffic, or traffic aggregates, as opposed to individual flows.

• RSVP is a flow-based protocol that lets an application signal the QoS (latency, jitter, bandwidth) it needs by sending end-to-end control messages across the network. Routers along the path will reserve resources for the application flow or

deny admission to the network. RSVP has been implemented in Cisco and Nortel Networks routers, as well as in many other vendors' products, for more than a year.

• 802.1p is a Layer 2 mechanism that allows three bits in an 802.1Q virtual LAN header to be used to mark a packet for QoS.

Enterprise network managers will likely be implementing Diff-Serv for most QoS requirements, with selected use of RSVP for very sensitive applications, such as voice over IP, that require resource reservation and admission control (better to reject a voice call than give it poor QoS).
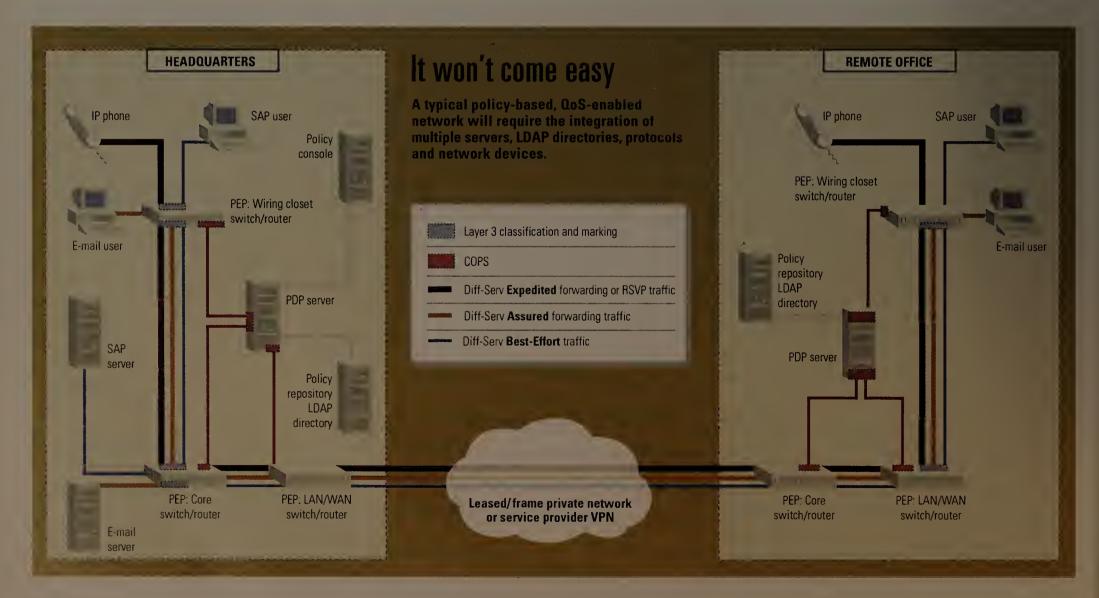
In the Diff-Serv model, the enforcement of QoS at a network-device level involves four steps. Packets are:

• Classified according to Layer 2 through Layer 4 (or higher) header information.

• Marked to indicate classification by setting the Diff-Serv bits.

• Policed (selectively dropped as necessary) in order to avoid congestion.

• Shaped (preferentially queued and forwarded).

As advancements in Application Specific Integrated Circuit technology continue to make Layer 3 functionality more affordable, expect to see higher-layer classification and marking driven back from the WAN edges all the way to the wiring closet; this is where most vendors believe this function ultimately belongs.

In practice, classification and marking involves the creation of access control lists. Policing is accomplished by an algorithm such as random early detection or weighted random early detection. Shaping is accomplished with one of many algorithms, including weighted round robin, weighted fair queuing, class-based queuing, class-based WFQ and many others.

Currently, it is up to the network manager to configure policing and shaping algorithms on an

It won't come easy

A typical policy-based, QoS-enabled network will require the integration of multiple servers, LDAP directories, protocols and network devices.

HEADQUARTERS

IP phone
SAP user
Policy console
PEP: Wiring closet switch/router
E-mail user
SAP server
PDP server
Policy repository LDAP directory
PEP: Core switch/router
PEP: LAN/WAN switch/router
E-mail server

Layer 3 classification and marking
COPS
Diff-Serv **Expedited** forwarding or RSVP traffic
Diff-Serv **Assured** forwarding traffic
Diff-Serv **Best-Effort** traffic

Leased/frame private network or service provider VPN

REMOTE OFFICE

IP phone
SAP user
PEP: Wiring closet switch/router
E-mail user
Policy repository LDAP directory
PDP server
PEP: Core switch/router
PEP: LAN/WAN switch/router

interface-by-interface basis. No wonder large-scale implementations of IP-based QoS have been rare.

Where the vendors stand

Over the past 12 to 18 months, every major network equipment vendor has announced a policy-based network initiative, but very few have shipped a product.

Cisco

Cisco began shipping QoS Policy Manager 1.0 (QPM) in March as part of the company's CiscoAssure Policy-Based Networking initiative. CiscoAssure also includes a policy manager for network security, called Cisco Security Manager. The QoS and security managers will remain separate going forward but will share a common framework.

QPM's graphical user interface simplifies many aspects of QoS configuration. In a typical session, a user might add a new router, select a queuing algorithm for each interface, create a policy for the interface consisting of a classification filter and action (set IP Precedence) and schedule the policy for download to the router. Interfaces of the same type can be grouped so policies can be applied at a group level, as well as at an individual interface level.

QPM is what you might expect from a first-generation policy manager: It provides some valuable productivity gains, but still exposes a lot of detail, such as choice of queuing mechanisms and shaping parameters, to the user. Thus, the network manager is still required to understand the operation of Cisco's many queuing algorithms.

The initial release of QPM does not use an LDAP directory and does not use COPS; expect to see both in the first half of 2000 (COPS is running in Cisco's labs today). The next release also will increase the number of devices supported from approximately 200 to more than 1,000.

Nortel

Nortel's Optivity Policy Services 1.0 (OPS) began shipping in August. OPS implements many of the concepts outlined in the IETF drafts, including the policy server, COPS and an LDAP-compliant directory store for policy information.

OPS currently stores policy information in its own branch of the LDAP directory tree but will be migrated to the IETF standard as the LDAP schema standard is firmed up.

Nortel is one of the first vendors to include a COPS client in a network device, namely routers running BayRS 13.20 routing software. OPS uses it for PDP-PEP communications. Other devices, including Cisco routers, are also supported.

In a typical OPS session, a user might add a router and individual interfaces, create a Traffic Pattern using filters, create an Action such as Deny, Mark or Police, and create a policy that associates a Traffic Pattern, Action and an interface. Interfaces of the same type can be grouped.

Similar to Cisco's QPM, OPS provides some valuable productivity gains but still exposes a lot of detail to the user. One capability missing in the

first release is the ability to specify and control the interface queuing mechanism. This must be done separate from the policy system via Nortel's standard router configuration software. The company expects this capability to be added to OPS in the first quarter of 2000.

Cabletron

One could argue that Cabletron has been doing policy-based networking in live production networks longer than anyone. Four years ago, Cabletron was shipping the Virtual Network Server (VNS), a sort of early PDP.

Preparing for policy-based networking

Ten steps on the road to IP-based quality of service:

1. Review the work being done at the IETF on policy networking. Understand the conceptual framework (PDPs, PEPs, etc.), and the purpose of the COPS protocol and PIB.

2. Review QoS technologies, particularly Diff-Serv, RSVP and 802.1p. Understand where each might apply in your network, and understand the basic steps involved in enforcing QoS: classification, marking, policing and shaping.

3. Get up to speed on LDAP and directories – it's clear they will play a crucial role in your next-generation network.

4. Understand the roles DNS, and DHCP will play in associating IP addresses with QoS requirements. Review the capabilities of DNS/DHCP systems from leading vendors.

5. Begin to profile your traffic and think about how you would classify it into categories based on QoS requirements.

6. Determine which points in your network are potential bottlenecks, particularly as voice and video are added to the network. Consider where it would make the most sense to classify and mark packets so QoS can be applied.

7. Pay attention to the QoS capabilities of the switches and routers you buy; classification and marking at Layer 3 and above is being pushed out to the wiring closet, and this is likely where you will want to do it in the long run. Understand the cost of adding classification and marking capabilities to various points in your network.

8. Review the policy-based networking plans of your leading vendors in the areas of QoS management and network security management. Policy-based networking initiatives are initially focused on QoS, but standards bodies and vendors intend to extend the concepts to network security management.

9. Review emerging service provider VPN offerings that include QoS. Consider how their services might be integrated into an enterprisewide, QoS-enabled network.

10. If your budget allows, implement a QoS policy management system; it will give you some near-term productivity enhancements and some valuable experience for the future.

But VNS was based on Cabletron's proprietary SecureFast Switching technology, and the company is now moving away from proprietary technology and onto a standards-based track. The company's SmartSwitches now support QoS standards such as 802.1p and use of the ToS/Diff-Serv field. The SmartSwitches also support four queues per port, WFQ, and Layer 2 through Layer 4 classification and marking, which means Cabletron can provide high-layer classification and marking in the wiring closet today — something most other vendors are trying to accomplish with upgrades.

Cabletron's QoS policy manager will be called Spectrum Policy Aware and is expected to ship in the first quarter of 2000. Policy information will be stored in an LDAP-compliant directory, and communications between the PDP and PEP will sup-

port COPS as well as other protocols. It can also use LDAP to communicate with the directory server.

3Com

3Com's policy server is also not expected to ship until the first quarter of 2000 and will tentatively be called Transcend Policy Service. It is expected to be consistent with the standards being developed in the IETF, including the policy framework and use of COPS. Policies will be stored in LDAP-compliant directories, and support for legacy devices will be provided via proxies.

3Com is also working on QoS-enabling many of its products, adding 802.1p to its Layer 2 switches, and ToS/Diff-Serv and RSVP to Layer 3 switches and routers. 3Com's Dynamic Access product also provides the ability to classify and mark packets at the network interface card, as long as it's a 3Com NIC card.

Multivendor management

The prospects for seeing policy-based management work across a multivendor environment are not good, at least in the near term. Implementations of the policing and shaping algorithms vary widely from vendor to vendor and even within a vendor's product line. To make policy management truly vendor independent, the general functions of policing and shaping have to be modeled and represented in a QoS schema and Policy Information Base (PIB). The PIB will have to be supported on network devices.

Most vendors will support their own equipment and will try to support Cisco. However, Cisco supports a long list of QoS mechanisms, and the list is getting longer all the time. Keeping up with it all will be difficult for Cisco, let alone for other vendors.

Despite the gloomy prospects for near-term interoperability, there is some reason for optimism. The long-term path to interoperability is relatively clear, and vendors are buying into it.

The bottom line

Policy-based networking is certainly in its early stages of development. The IETF has made significant progress, but more needs to be done. It will likely be another year before most of the relevant standards have reached RFC status.

Perhaps more importantly, the IP community is still a year or two away from really understanding how to best use techniques such as Diff-Serv and RSVP to implement QoS in production networks. Once there is some reasonable consensus in this area, vendors will need to make it easy for customers to implement these techniques on an enterprisewide basis.

But don't be afraid to jump in — the water's a little chilly, but getting warmer. Getting your feet wet with the technology now will help ensure that your network will be QoS-capable in the future.

Stenson is president of M5 Systems, a consultancy in Boston, and is a former vice president of network architecture at a major financial institution. He can be reached at tstenson@m5systems.com.

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Deploy software automatically

Today's software distribution packages aim to keep technical personnel from visiting every PC that needs an upgrade.

BY JAMES GASKIN,
NETWORK WORLD TEST ALLIANCE

Remember how easy installing DOS programs used to be? Step 1: Copy files. Step 2: Start program. Such simplicity disappeared when Windows applications began scattering files across a hard disk like debris in a tornado. Today's convoluted procedures often require a trained administrator at the keyboard to execute installations. This hands-on technical support accounts for one of the biggest corporate PC expenses.

Here come software distribution packages to the rescue. These packages install applications remotely without requiring you to drag CD-ROMs to every computer. After testing four distribution programs, we think PictureTaker Enterprise Edition 2.0 from LANovation works the best for large corporations requiring remote user support, while WinInstall 6.5 from Veritas Software is an excellent product for LAN-bound companies.

A powerful console and flexible reporting options nearly stole first place for WinInstall, but PictureTaker took home our Blue Ribbon for its superior control over captured files and its ability to take advantage of existing network directory services. PictureTaker's one drawback is its large local disk space requirements. The network-intensive WinInstall takes some getting used to before you're ready to roll.

20/20 Software's AutoInstall 1.1 offers the widest range of configuration options and makes the best use of Novell Directory Services, but it's impeded by an odd setup procedure and problems with the uninstall process.

InstallShield's NetInstall 4.2 includes a complete list of files you can edit exhaustively to create custom installation packages. But the extra editing tools make for more work than we'd like.

All the programs we tested make use of a "clean" PC that saves changes made to the file system, registry and desktop for distribution. WinInstall and NetInstall require a separate console for software distribution; PictureTaker and AutoInstall let this clean PC double as a console.

Based on our experience, here's a tip: Before you roll out software to a large set of PCs, first run through the capture and deployment process with a test client to work out the details. Several programs let you tweak distribution files for different Windows versions. We found that a pair of clean PCs for each version makes life easier. Be aware, however, that this can translate into as many as eight clean PCs to cover Windows 95, 98, NT and 2000.

Special delivery

PictureTaker provides a fine level of control and granularity, including the ability to add single icons to the desktop or Start menu. An excellent 200-page manual and accompanying HTML version on the CD-ROM explain everything clearly.

PictureTaker runs from a network drive, so any Windows 95 and 98 station can act as a console. A small optional PictureTaker client is available for 95 and 98 clients, and gives you more control, including the

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Product: PictureTaker Enterprise Edition 2.0

Vendor: LANovation

PictureTaker takes home the Blue Ribbon Award with flexible client and application control, and strong distribution techniques.

NetworkWorld Blue Ribbon

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option to install a program from a Web page. NT systems require client software that lets PictureTaker bypass restrictions on file security to let users without administrative authority install software to all areas of the disk — an interesting accomplishment that calls to task Microsoft's security implementation.

We found plenty of options for making predefined software additions and deletions but not an overwhelming selection. Want to replace the registry? Dangerous, but possible. Add a key to the registry? No problem. Copy the entire Start menu or just

additions? Replace comple... ... or just add lines to existing ... can select any of these op.... ... more with check boxes, rad...... and drop down lists. Almost no... requires you to remember an it... and type it into a box.

In our tests, PictureTaker had no trouble capturing Network Associates VirusScan, although LANovation's manual left out a necessary reboot. Capturing NetObjects' Fusion went well, but took some time because of the size of the application and the number of directories and files. PictureTaker doesn't compress files; instead, it places them on a server drive or creates a single distribution bundle to send to the client.

You can easily modify installation sets, or "pictures," and you can add, delete or modify files through a Windows Explorer-like interface. You can save multiple application sets that let users get what they need as necessary or reinstall critical files that disappear.

Client installations went smoothly. To trigger a file update, you can use logon scripts; send a batch file via e-mail for the user to execute; plug the installation into Task Scheduler for Windows NT or System Agent on Windows 9x; or pass a command-line argument via Microsoft's Systems Management Server (SMS). PictureTaker also supports Novell's Application Launcher.

Our only real criticism is that PictureTaker requires about twice as much disk space on the client as an application will ultimately need. PictureTaker stops installs when there's not enough disk space and erases everything that was put on the client up to that point. Fortunately, you can set an available disk space parameter for each client software package that instructs PictureTaker not to attempt an installation unless there's a certain amount of free disk space.

PictureTaker upgraded our client desktops, modified menus and updated the Add/Remove Software Control Panel list. Its uninstall function worked pretty well. We had to remove a few pieces of VirusScan manually, but PictureTaker complete-

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ScoreCard

	Capture flexibility 20%	Client control 20%	Application control 15%	Manageability 15%	Reporting 10%	Distribution 10%	Installation 5%	Documentation 5%	Total score
PictureTaker Enterprise Edition 2.0	7	8	8	7	7	8	8	8	7.55
WinInstall 6.5	7	7	7	8	8	8	7	7	7.35
AutoInstall 1.1	7	6	6	8	7	8	7	6	6.85
NetInstall 4.2	6	6	6	7	7	8	6	6	6.45

Individual **category scores** are based on a scale of 1 to 10. **Percentages** are the weight given each category in determining the **total score**.

ly cleaned up NetObjects' Fusion. By default, PictureTaker instructs each PC to reboot once the process is complete, but that is configurable.

You can update remote clients with PictureTaker's client software over the Internet; clicking on a link on a Web page downloads a distribution package and triggers an update. The application is also LAN-aware — logon script controls use existing network directory services rather than create yet another list of users to administer.

Suite distribution

WinInstall is part of Veritas' Desktop Management Suite, which the company purchased from Seagate Software this year. With the exception of a few file names that haven't been updated to reflect the new ownership, WinInstall is in excellent shape. Its console is far more powerful than those of the other applications we tested because it's designed for the entire management suite.

WinInstall requires a console for the management program and a separate clean PC for installation capture, whereas PictureTaker uses one PC for both jobs by running the console software from a network drive. Because of the enhanced management console and extra files added to its console PC, the need for two PCs makes sense for WinInstall. But be aware; while you can store files on the network server, you can't run the console on any PC you want, as you can with PictureTaker. WinInstall's console application, even if stored on a network drive, must be installed on the management console PC.

WinInstall assumes managers want to roll out applications in an organized, planned manner. Oddly, we found you have to decide on a distribution method before making a snapshot of the new application. No other package made us declare the distribution method this early.

All the standard distribution options are available, including e-mail and browser downloads. Windows NT clients can run a local NT service to pull files as well.

The manual warns users to pick a server with plenty of free space, with good reason. WinInstall saves space for the entire directory structure of installed applications, which it copies from the staging PC. You can optionally compress the files, but the default for local machines is to copy the file structure from the server.

During installation, clients can write back their results to a database. The database can be created in Microsoft Access, through Open Database Connectivity, or in dBASE or FoxPro. Application distribution files can be secured with a password. WinInstall shares its database, which lets other programs write reports.

WinInstall loaded VirusScan and NetObjects' Fusion completely and accurately, although not terribly swiftly. The program rolls back failed installs automatically, and the WinInstall client program that downloads files has an Uninstall button as well. Only local data files created by Fusion were left behind on the local disk; this is understandable because the Uninstall routine wouldn't know about those files.

WinInstall includes a sample application along with a dozen predefined reports and exhaustive help screens. You can customize reports with the bundled Crystal Reports Professional. A huge, well-designed manual is available online in Portable Definition Format.

Remote PCs are supported, but the required client software and constant interaction between client and server makes remote configurations more difficult. But if your clients are local, WinInstall has all the controls you need.

True push technology

AutoInstall from 20/20 Software gets close to achieving the complexity and control of WinInstall, but it's not as smooth. The flexibility is there, but AutoInstall is tougher to master.

Where AutoInstall outclasses WinInstall is in file control. Unfortunately, the program's multiple options are always in front of you on the bottom three-fourths of the screen. While WinInstall hides most of its configuration choices on tabbed pages in the console, AutoInstall forces managers to wade through them too often.

Like PictureTaker, AutoInstall requires only a single clean PC for installation and management. Most of the applications being distributed stay on a server. AutoInstall is intelligent enough to ignore the software it has added to the clean PC when copying new applications to it.

Applications are monitored and compressed for storage on a server; AutoInstall compressed the graphics-rich NetObjects Fusion file by more than a factor of three. Two nice tricks also distinguish AutoInstall: The program can chop files into

1.4M-byte sets for use on diskettes or keep them bundled in pieces just less than 50K bytes to more easily sneak through the Internet.

Application packages are saved as .exe files, which work great when they're pushed down to clients by AutoInstall manager or attached to e-mail for distribution. But while prepackaged .exe files eliminate the need to modify client files on each desktop, they raise a red flag in today's virus-conscious organizations that train their users never to run a .exe file that comes as ane-mail attachment, no matter who is listed as the sender.

AutoInstall is the only program that immediately pulled all the network user information straight out

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PictureTaker Enterprise Edition 2.0
LANovation
(800) 747-4487
www2.lanovation.com/
products/ptee/ptee_info.htm
Pricing starts at **$450** for 25 managed PCs

Network World Blue Ribbon WINNER

Pros
▲ Works with SMS and NetWare Application Launcher
▲ Excellent control over captured files and images
▲ Web download update option

Cons
▼ Complex management
▼ User interface makes poor use of multiple windows

WinInstall 6.5
Veritas Software
(650) 335-8000
www.veritas.com/products/wi
Pricing ranges from **$995** for 50 nodes to **$7,495** for 500 nodes

Pros
▲ Extensive console
▲ Accurate
▲ Flexible reporting options

Cons
▼ Network intensive
▼ Requires study to get rolling

AutoInstall 1.1
20/20 Software
(503) 520-0504
www.twenty.com/pgs/piaidx.html
Pricing ranges from **$8** to **$20** per seat

Pros
▲ More control options than any other system
▲ True push when client software is resident
▲ Good compression capabilities
▲ Excellent use of NDS

Cons
▼ Odd setup
▼ Uninstall problems
▼ Requires manual adjustments for each installation package
▼ Save as .exe files

NetInstall 4.2
InstallShield
(800) 374-4353
www.installshield.com
Pricing starts at **$875** for 25 nodes

Pros
▲ Complete, editable listing of files to install
▲ Works with SMS

Cons
▼ Confusing documentation
▼ Odd process for capturing application installations
▼ Incomplete installations and removals

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of the NetWare server and put each user in a pick list for easy access. Something about this isn't right, however, because AutoInstall tried to download application sets to several stations even when we tagged only one.

AutoInstall requires client software; a single line automatically added to NetWare logon scripts loads the AICLIENT.EXE file. This software stays resident and adds a true, simple push methodology for updating software. Just label a client for an upgrade on the management console, and in a few seconds, the console and client make a connection and start the download.

How we did it

We deployed two sample applications: Network Associates' VirusScan 4.0 and NetObjects' Fusion 4.0. We chose these applications for their complexity. VirusScan worms its way into Startup listings and deep within the operating system. Fusion is a large application with more than 1,300 files to find, compress and track.

We installed, reported, tested and removed both programs from Windows 95/98 test systems. Our NetWare 5 server was a 75-MHz Pentium with 72M bytes of RAM. Our server running Windows NT Server 4.0 with Service Pack 4 was a Gateway 120-MHz Pentium with 64M bytes of RAM. Our clients included a 486/80 with 16M bytes of RAM running Windows 95, a Gateway 120-MHz Pentium with 64M bytes of RAM, and a 233-MHz Pentium with 128M bytes of RAM running Windows 98.

Another nice touch is that with installed applications, AutoInstall sends an uninstall package that stays on the client. However, the uninstall programs refused to work in our tests, even though AutoInstall loaded the proper information into Windows and its Add/Remove Software controls.

AutoInstall isn't the fastest program we tested, but its considerable control and true push technology make it easy to upgrade clients at 2 a.m. Because of AutoInstall's client-centric orientation, it doesn't give you many details on how installations went. There's no listing by program, for example.

For remote clients, AutoInstall offers plug-ins for Microsoft Internet Explorer and Netscape Navigator browsers to trigger installations via a Web server. It's similar to PictureTaker, but you must download the plugins.

Editing tools galore

InstallShield's NetInstall is the most NT-focused application of the group. Rather than use a separate console and clean PC for installation, NetInstall demands a dual-mode NT system. Specifically, NetInstall sets up dual partitions on the NT system, and the setup and cleanup utilities work between the two partitions. Flipping back and forth between the clean PC and manager PC modes of the system for software installation and capture is awkward. You can bypass this, but not easily.

The administration console follows

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the two-paned Explorer model. Plenty of icons offer strong features, such as push technology triggered by time intervals in the client software. Net-Install can also put a software icon on a client PC and only install software when a user needs it.

You can quickly tap into Microsoft's SMS. Once launched, NetInstall can use the SMS Process Command Manager on the client for application installation.

Unlike the other programs, NetInstall locates all new applications under the \Windows directory by default — if you don't put them there, NetInstall won't pick up the changes to Windows system files. Because programs gener-

ally want to go in their own directory or under \Program Files, this requirement took some getting used to. We had to install NetObjects' Fusion twice because the first time we forgot to force it under \Windows. Once corrected, NetInstall captured, deployed and ran the application as intended on client stations. NetInstall captured VirusScan easily enough, but VirusScan didn't work after it was installed. Device drivers were scrambled, and files were missing.

When NetInstall removed Fusion, it left behind more than 3.6M bytes of files. These weren't files created by the station client, but seemingly random files tucked here and there in directories.

NetInstall includes many script creating and editing tools that let you create file update packages from scratch. But the point of a software distribution package is to save time and trouble, and tweaking application packages to death doesn't save either.

A program as visually slick as this shouldn't cause such installation aggravation and should include some way to conveniently handle remote users. Nor should a manual that looks as good as NetInstall's be inaccurate, yet the product's manual and online help disagree with the program far too often.

Wrap up

All these programs provide value, but try to keep your expectations under control. No matter how much you tweak individual file security settings or Registry entries, all clients won't be installed correctly. As we all know, when users install applications on their own, problems follow. These software distribution options work best when the user community is controlled and PCs are "locked down" by the IS department. Play it conservatively, and be happy if the 80/20 rule kicks in and you upgrade 80% of your desktops with 20% of the work. Wildly divergent client configurations will lower your success rate, but anything is better than schlepping media around to each and every PC in the company.

Gaskin is a freelance writer specializing in technology. He can be reached at www.gaskin.com or james@gaskin.com.

ANATOMY OF AN ESD EVALUATION

BY CHRIS POHL

My assignment: Evaluate and recommend the best scalable electronic software distribution (ESD) system for my multinational, Fortune 1000 organization.

Initial implementation: more than 2,000 Windows 95 and NT desktops at company headquarters.

Second phase: more than 6,000 seats around the world.

Desired features: Wake-on-LAN, multicasting and checkpoint-restart.

The thought of a solution that would boot all the systems on the network and distribute a package with one network broadcast was appealing. Also attractive was the checkpoint-restart feature with which a distribution would continue when a network outage or other event caused it to stop. While these technologies exist, their combination in one product was hard to find. A more thorough evaluation became necessary.

Our project team consisted of three Microsoft Certified Professionals experienced in implementing technologies at the desktop.

The company culture has allowed end users to maintain control over their desktops, and that's not going to change in the near future. While a feature list was the primary driver for the evaluation of the ESD solution, the cultural realities weighed heavily, as well.

The culture dictated that we adopt "snapshot" technology rather than the "footprint" method of software distribution. Snapshot distribution is the fire-and-forget method of sending a package down to the client machine, executing the package, confirming the successful distribution, and then leaving the configuration in the hands of the PC user or local administrator.

The footprint method enforces a known configuration for each type of user. If an end user or local administrator were to install software, perform an uninstall or even move a directory, the ESD system would return the PC to its original standard configuration at a preset time. While a great technology for computer classrooms or bank teller PCs, this level of control presented too many configuration and cultural issues.

We divided our selection criteria into three categories: required features, preferred features and influencing factors. These three lists evolved over time as the ESD vendors demonstrated unique technologies and enhancements that could benefit our organization.

Required features

We completed the evaluation with a required features list of 16 items, although, in hindsight, I would recommend a shorter list.

Project team scrutinizes product features, but cultural issues weigh heavily in the final decision.

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1. Ability to automatically detect and reconfigure clients when they are relocated.
2. Ability to completely and selectively rollback or undo a distribution.
3. Data accessibility, either directly or through Open Database Connectivity connectors.
4. The EDS software does not force a configuration on an end user.
5. The software releases a job to its clients and is considered finished upon successful installation, with the exception of reporting the status of the job.
6. Ability to perform bandwidth throttling or the ability to detect bandwidth saturation and to reduce demands on the network.
7. The ESD administrator, from the ESD server, can dictate frequency of contact between the ESD client and server.
8. Ability to process distribution jobs by any combination of subnet or IP address, hardware, software, user specific data, specific PCs or PC components.
9. Ability to add, change or remove NT services.
10. Ability to schedule distribution jobs to be run at certain times in the future.
11. Ability to make administrator-level changes to NT systems with the local administrator account or password.
12. Ability to provide the status of distribution jobs for each user.
13. Ability to package a distribution job or use an installer created with another packaging utility.
14. Ability to search and replace registry settings.
15. Ability to provide multiple administration levels.
16. Ability to support the combination of footprint and snapshot configurations.

Preferred features

This list lets us maintain a product comparison for features that were important for the organization but did not directly support our primary objectives.

1. Fault-tolerant client agents.
2. Client uninstall feature.
3. Ability to track and replace particular files.
4. Ability to launch an executable.
5. Ability to create and maintain unique groups.

6. Ability to provide extensive reports.
7. Ability to distribute jobs to remote computers.
8. Ability to search and replace .INI, config.sys and autoexec.bat files.

Influencing factors

The third section of our evaluation criteria was a listing of our influencing factors. Keeping these comparisons eliminated confusion among the project sponsors and IT management. It also contributed to the overall confidence that the project team addressed every issue prior to making its recommendation and that its focus on finding the best ESD product was intact.

1. Technical support.
2. Integration with future help desk solution.
3. Software/hardware inventory, remote control, software metering, internet software distribution.
4. Ease of administration.
5. Product maturity.
6. Infrastructure requirements.
7. Future development plans.
8. Training.
9. Overlap with existing applications.

Mission accomplished

Obviously, no one product satisfied all of our criteria. We considered the possibility of combining footprint and snapshot technologies as a way of supporting our diverse group of end users and slowly gaining control of the organization's desktop configurations.

We chose to discard this course of action because we determined the support issues involved in forcing some applications while giving the user the freedom to modify other parts of his configuration was too great.

We decided on an ESD product that falls toward the snapshot end of the spectrum. And we decided to use a future NT Workstation rollout as the opportunity to "lock down" the desktop configurations. This rollout would move slowly through the company, allowing for problem detection and remediation, and it would include the user in the process.

If there is one thing I would advise an IT manager to do in an ESD evaluation, it would be to keep all evaluation data in one central document. Keeping the requirements list as the central point of discussion allowed the team members to explore each ESD solution at the nuts and bolts level without losing sight of what the organization requires of ESD. In the end, our document made our recommendation.

Chris Pohl is project manager, information systems, at a Fortune 1000 company in California. He is an MCSE with 10 years of project management experience. He can be reached at cpohl@gte.net.

Buzz kill

Some network professionals have to report to work on New Year's Eve just in case systems go haywire.

BY SUSAN BREIDENBACH

High-tech advertisers, take note: An unprecedented number of IT professionals will be among CNN's audience on Dec. 31 as they watch year 2000 roll in around the globe. The cable news network is one of the information sources that Y2K response teams say they will be monitoring closely, along with key vendors' hotlines and Web sites.

With the big event just three months away, there is a high level of confidence that most industrialized nations will make it into the next year largely unscathed. Software has been fixed, systems have been tested and contingency plan drills have gone off without a hitch.

"We are very confident about our payroll business," says John Gregory, a Y2K program manager at Automatic Data Processing (ADP) in Roseland, N.J. The nation's largest check processing service provider recently participated in a seven-week Keep America Paid test with government agencies and banks; the test went "flawlessly."

Nevertheless, the entire IT staff will be on-call all day Dec. 31. Gregory will be on site in ADP's command center, joined by about 60 other IT colleagues and some key business managers. New Zealand will ring in the New Year at 7 a.m. EDT, giving the ADP team 17 hours to watch things unfold.

"If data-related problems show up, we will implement a contingency plan, back up the data center and maybe turn off the mainframes," Gregory says.

But Gregory and his counterparts on other Y2K teams don't expect things to reach that point. Reports that entire IT staffs will be at work during the rollover have been greatly exaggerated. Businesses that typically operate around the clock 365 days per year are increasing staffing by much more modest numbers.

"Critical people will be on site, but we won't have a lot of people around just for show," says John Yowell, Y2K program manager for Midwest Express Airlines in Oak Creek, Wis. His company's reservation system has been booking tickets into 2000 since Feb. 4 without a hiccup.

Year-end is normally a busy time for cross-town neighbor M&I Data Services, which provides financial-transaction systems to the banking industry. The company expects to have about 400 people in its Brown Deer, Wis., data center — about twice the number that would usually be on duty Dec. 31.

"No one gets paid any overtime, and IT people are used to working on projects that are measured in months rather than years," reports Marty Langer, vice president of business outsourcing and Y2K director. To boost morale, the company instituted a bonus program. It also now provides a concierge service that runs personal errands for Y2K team members.

In general, though, people who have to be at work on New Year's Eve don't seem to resent the fact. Instead, they tend to view the event as a once-in-a-lifetime adventure.
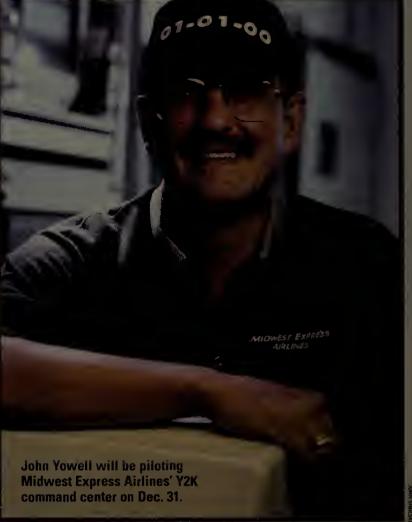
"We haven't had any morale problems," reports Jane Weeks, vice president of international IT for Bass Hotels & Resorts in Atlanta. "In fact, we have the opposite problem — we're telling a lot of people who want to be there to stay home."

A successful Y2K transition also depends on the ability of public utilities to maintain service throughout the rollover, and Alliant Energy in Madison, Wis., will have about three times as many people as usual on duty Dec. 31. The company has businesses in New Zealand and Asia, and will be watching closely for problems with embedded systems in power infrastructures as the rollover progresses.

Alliant plans to keep phone lines to key vendors open in case it needs technical support, so busy circuits won't be a problem. The company also bought satellite phones to use in case the public phone network fails.

"Inevitably on New Year's Eve, people will run into power poles and cause power failures," says Bob Newell, Alliant's Y2K project manager. Alliant's public relations people will be out in force on Dec. 31, trying to ensure that such incidents don't get mistaken for Y2K problems and escalate into panics. And corporate executives will be on site at three locations and available to large commercial customers.

Most big companies will have generators on site. Curtis Asbury, chief information officer of reinsurance brokerage Holborn Corp. in New York, has vivid memories of the week-long power outage in the 1980s when a power station blew up and Manhattan streets were jammed with generators on flatbeds.

"We've booked generators for the rollover," Asbury says. "About 70% of our reinsurance contracts renew on Jan. 1, so we can't shut down."

However, Jan. 1 isn't the only date businesses are worried about. The millennium bug could bite early at financial services companies that handle equities with T+3 settlements. Dec. 29 is the first big processing date for trades that settle in 2000, so Y2K teams will be on full alert.

Some companies are going to go back into Y2K mode on Feb. 29 in case their programmers implemented leap-year rules incorrectly.

"I won't rest easy until after Feb. 29," Midwest Express Airlines' Yowell says. Even then, there will be a few date-sensitive routines yet to be run for the first time in 2000.

Still, the overall mood is upbeat and confident. Andy Bochman, a consultant with Aberdeen Group who conducted Y2K preparedness training around the world, wonders if people aren't getting a bit overconfident. He expects the anxiety level to pick up a bit now that the lazy days of summer are over.

"If you go to just the people who are really close to the problem, like the COBOL programmers, you see things through a different lens," Bochman says. "They are still finding a lot of problems. If you want to get wasted on New Year's Eve, do it in a low-tech area like a cabin in the woods."

Breidenbach is a consultant and freelance writer in San Mateo, Calif. She can be reached at SBreide@aol.com.

John Yowell will be piloting Midwest Express Airlines' Y2K command center on Dec. 31.

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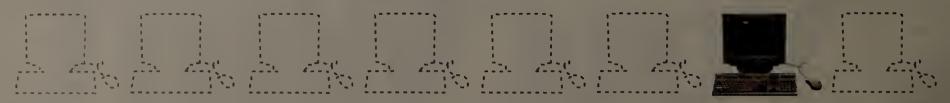
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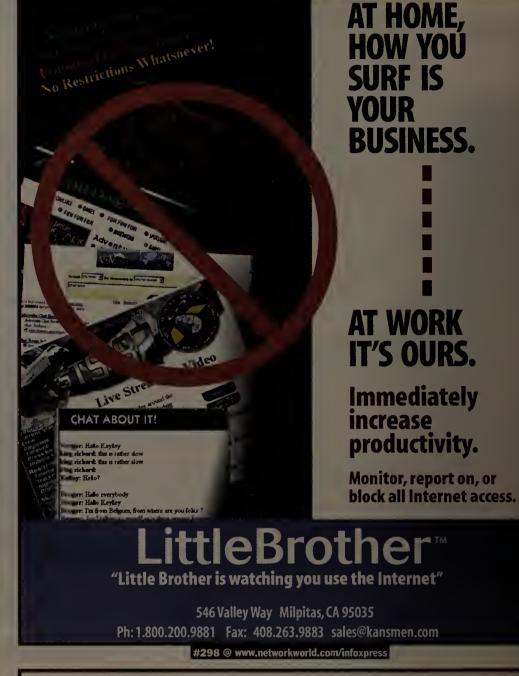
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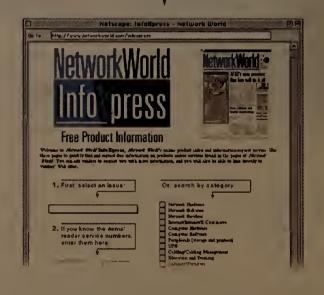
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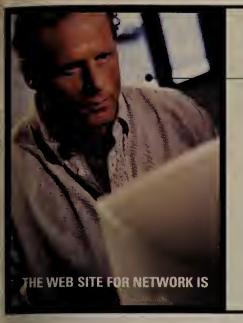
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plans to reduce those sales.

3Com wasn't advised of the changes ahead of time. "I heard the same time you heard," says Jean Myer, manager of strategic relationships at 3Com. IBM brands 3Com's CoreBuilder 5000 switch as the IBM 8260 and several SuperStack II Ethernet switches as members of IBM's 8271 line.

Xylan, for its part, had already decided to get out of the OEM business, according to a Xylan spokesman. At the beginning of 1998, IBM sales brought in 21% of Xylan's revenue, but it was down to 13% by year-end. Sales to IBM were already expected to decrease to zero by the end of this quarter. IBM resold Xylan's OmniSwitch as the IBM 8274 and sold some models of Xylan's OmniStack line.

The safe choice?

Cisco and IBM were already strong in mainframe environments, and this move "effectively locks out any competing vendors" in those areas, says John Armstrong, director and principal analyst at Dataquest. Most large enterprise users at this point have purchased Cisco or Nortel Networks hardware and are unlikely to shift from their decisions, he says.

Because of the large consolidation, Cisco will have to wait 30 days while the U.S. Department of Justice reviews the deal, says Selby Wellman, head of Cisco's InterWorks business division. But the integrated data, voice and video market is wide open, and "the leaders have yet to be established," he says, so he doesn't believe the deal will present an antitrust problem.

Cisco and IBM are vendors that appeal to large enterprises interested in buying from large, established, safe companies, says Craig Johnson, a principal analyst with Pita Group, a consultancy in Portland, Ore. "Cisco and IBM — gee, sounds like a safe purchase to me," he says.

But competitors smell opportunity. 3Com will try to win over former IBM customers before they migrate to Cisco gear, Myer says. Many IBM customers may be put off by the suddenness of the move and could be willing to go with the original manufacturer of the equipment they have been using, she says.

Nortel Chief Marketing Officer Bill Conner hints that he sees a chance to sell gear to former IBM customers as well, noting that Nortel has had success against IBM's Nways switches and Cisco's BPX switches. "They've got an interesting road ahead of them to migrate the Nways to BPX," he says.

Conner says IBM threw in the towel because its network business wasn't as large as that of its competitors. Network giants such as Alcatel, Cisco, Lucent and Nortel have been gobbling up smaller network players in an attempt to broaden their network product lines. "Networking scale has come of age," Conner says.

Numbers not there

IBM's enterprise network revenue doesn't show up in the list of top 10 vendors in most categories, according to Dataquest's Armstrong. Last quarter, IBM made the top 10 with $22 million in the branch-office router market and $14 million in the token-ring switch market. "They've been off our radar screen for a while," Armstrong says.

Analysts agree that Cisco is in an even better position than before and will continue its dominance of the enterprise network hardware market. One aspect of this is that Cisco has traditionally lacked good management products, but it will now get them through IBM's Tivoli management software, Johnson says.

Where Cisco might have a conflict is with its relationship with Microsoft, he says. Cisco has said it will build policy-based management around Microsoft's upcoming Active Directory. But IBM has been pushing its SecureWay directory.

"Where does that leave Microsoft?" Johnson asks. "Cisco is going to have to play both sides."

Senior Writer Marc Songini contributed to this story.

IBM'S NHD: R.I.P.

f we were to write IBM's Networking Hardware Division's (NHD) obituary, it might go something like this:

IBM's NHD group ceased to exist as an innovating entity this past week. Causes of death were multiple: atrophy of ideas and products, lack of marketing savvy, and a lack of faith on the part of its corporate parent in the group's ability to turn a profit. The division is survived by two loving children: Token Ring and SNA.

This is a sad tale, no doubt. But could the group's death have been avoided? Probably. Its history is marked with a litany of potential turning points. Aircraft crash investigators will tell you a crash is not caused by a single failure, but a series of failures — and such is the case with NHD.

Many incidents could be traced back to the leadership of Ellen Hancock, who headed the Networking Hardware and Networking Software divisions until 1995. Sources say overtures were made during her tenure to have IBM buy then-upstart Cisco. Hancock refused.

Also under Hancock's watch, IBM introduced its ill-fated 6611 router. It was generally dismissed as being too little, too late.

Over time, other failed NHD strategies came to include the big software push of System Application Architecture, SystemView network and systems management wares, as well as 25M bit/sec ATM to the desktop.

The ATM market in general wasn't kind to IBM. The company tried to lead the industry by announcing a family of ATM switches in 1994, but many of the products never saw the light of day. Even as late as last fall, IBM said it would come out with a family of home-grown Ethernet switches, but they too died an untimely death.

These failures were noted and foretold by a *Network World* column in 1995 that read: "IBM continues to offer a bewildering array of network solutions that are often at odds with one another . . . . IBM has established so many architectures in so many areas that most customers, confused by what's real and what's slideware, have stopped listening."

Indeed, that observation proved to be more than a little prophetic.

— *Michael Cooney*

NHD concedes

IBM will keep its Token Ring and legacy products.

IBM's front-end processor

IBM's Networking Hardware Division products were a factor in some LAN switching markets . . .

'98 worldwide token-ring revenue
Total revenue: $274 million

- Madge 12.5%
- Olicom 19.7%
- Nortel 10.8%
- Xylan 7.3%
- 3Com 7%
- Other 3.2%
- Cisco 19.7%
- IBM 19.8%

'98 worldwide LAN ATM revenue
Total revenue: $1.1 billion

- Cisco 24.4%
- FORE 31.4%
- No 18.
- Other 9.7%
- Xy 8.
- IBM 7.6%

SOURCE: IDC, FRAMINGHAM, MASS.

IBM users,

NHD's best talent, which will leave him without adequate service and support for his IBM 2216 routers. "This is huge for us," he says.

His company has a network anchored by 15 IBM 2216 routers and hundreds of Cisco routers. To simplify managing this net, the IS manager had already been considering taking the IBM routers out of the network and making it an all-Cisco net. This announcement will probably hasten that initiative, he says.

"I'm not sure exactly what IBM selling its patents to Cisco is going to do," says Ken Mangold, an IS manager at J.B. Hunt, a transportation firm based in Lowell, Ark. This is just another example of how IBM has been reshaping its role to become an OEM supplier, Mangold says.

IBM will still maintain a data center presence with its mainframes and midrange servers, Mangold says, but now they'll be attached to Cisco switches and routers rather than channel-attached boxes made by NHD.

IBM's response
For their part, IBM executives tried to reassure customers that the company was not skipping town on them. "We will try to exit gracefully over the next 12 months. We will continue to maintain the product for as long as customers want," says Michel Mayer, general manager of NHD.

In the meantime, IBM will fulfill all existing sales contracts and continue the production and improvement of its current switching and routing lineup for the next year, Mayer says. Support and service will continue for another four years or so. For those who don't want to migrate to a Cisco platform, Mayer says IBM is willing to help customers go to other vendors.

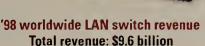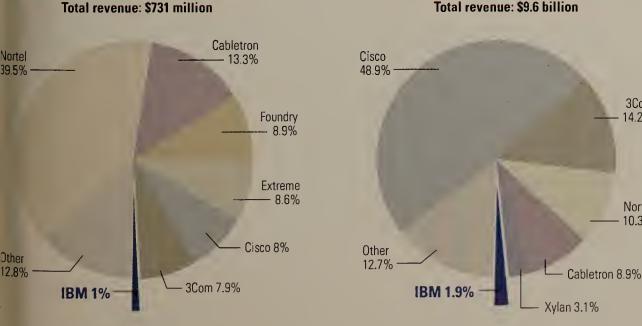"IBM always had strong communications technology and seemed to be moving ahead in the high-speed Ethernet and ATM areas, but had been hampered by the lack of a strong sales focus," says Donald Haile, an IS manager at Fidelity Investments, a Boston financial services company. Haile is a former NHD chief executive, and he believes Cisco got a very good deal for the money it paid for the patents.

Some observers have taken a dim view IBM's business acumen. One net executive who requested anonymity says the product lineup was actually pretty good. "The company started to come out with some home-grown products that meet the market's needs and started to show a real technology lead at a good price point."

But he says NHD "could neither understand how to market network hardware as a real complement to the server platforms it succeeds with day in day out, nor did the company have the desire to succeed in corporate networking land." ■

READERS REACT TO CISCO-IBM DEAL

IBM's announcement last week that it was selling its routing and switching patents to archrival Cisco had *Network World's* online readers weighing in with their opinions.

One reader says: "After the $2 billion acquisition of Xylan by Alcatel, this seems a logical step" much more so than wasting nearly $7 billion on Cerent, a recent Cisco purchase. "IBM will offer Cisco much-needed credibility and penetration with true-blue mainframe data center accounts." The reader goes on to say that with "one fell swoop" Cisco has scooped up some more market share "and in the emerging network commodity market this will be the winning factor."

Some commentators felt the deal was inevitable because of Big Blue's condition. "IBM suffers from a problem that is similar in other large technical companies," one reader says. "That problem is the internal politico-management structure that just cannot rise above the old way of doing things. This results in poorer products and performance. This has been seen time and time again in the past 10 to 15 years, and that is why the likes of Cisco and other 'techie' start-up companies have been so successful."

He goes on: "The old-guard management style is to fight over internal product ownership among multiple divisions and be visible in the eyes of upper management. The political ramblings force delays for crucial product decisions and can even stagnate product development. Worse is the belief that the competition is just not real. For all the things that IBM said it has done to change into a lean mean tech machine, it is obvious it has not done enough."

Another reader is convinced IBM's struggle with Cisco was hopeless all along, and this deal with Cisco will prove a boost to Big Blue: "I strongly believe that IBM was never going to be able to fully compete in the IP networking market. Unless there is a definitive agreement in place to sell only Cisco equipment, IBM sales folks will be free to sell any networking vendor's product. And they won't have to worry about shrinking margins, either!"

There are also predictions. One reader who spent years in IBM's network business partners program states: "The rumor always making the rounds was that IBM was going to sell [NHD] off and concentrate on licensing its Prizma ATM switch chip to OEM companies," says reader Steve Evans. " Cisco now owns the rights to IBM's latest Data Link Switching code for SNA in IP encapsulation. Since the IBM router code is far superior to Cisco's, it wouldn't surprise me in the slightest if Cisco ports the code directly [to its own products]. You'll have new Cisco code based on a stable, well-developed code core."

What do you think? Head online to add your comments to our forum at www.nwfusion.com, DocFinder: 4535.

— *Marc Songini*

IBM will cease production on all its ATM and Ethernet switches and routers.

IBM's 2216

... but NHD could not compete in newer markets or the overall LAN switching market.

Get more info online.
DocFinder: 4528
www.nwfusion.com

'98 worldwide Layer 3 switch revenue
Total revenue: $731 million

Nortel 39.5%
Cabletron 13.3%
Foundry 8.9%
Extreme 8.6%
Cisco 8%
3Com 7.9%
Other 12.8%
IBM 1%

'98 worldwide LAN switch revenue
Total revenue: $9.6 billion

Cisco 48.9%
3Com 14.2%
Nortel 10.3%
Cabletron 8.9%
Xylan 3.1%
Other 12.7%
IBM 1.9%

Backspin

Hairstyling tips for computer users

ant to know why I wear my hair so short? Let me tell you a story: I sat down to write this column on Saturday morning and I got an e-mail message. I had e-mailed a document to a business colleague the day before, and the message told me that my transmission had triggered the Norton AntiVirus for Exchange system. Apparently my document was infected with the Word macro virus "Jerk." Terrific, a great way for a consultant to treat his clients.

The mystery was how this was possible. I run an up-to-date copy of McAfee VirusScan and it didn't have any problem with the file, so how come the recipient's system was detecting a virus?

As I had a copy of Norton System-Works that included Norton AntiVirus, I thought I'd install it and see if the virus was detected.

SystemWorks is potentially cool. The package includes all sorts of neat utilities as well the object of my desire. Unfortunately, after installation my monitor resolution was reset to VGA. Why? No idea. And there was no way to easily reset it to a 1,024 by 768 resolution because the system tray applet no longer offered a list of supported resolutions. I ran Norton AntiVirus anyway and nothing!

But now I had another problem. I tried to reset the resolution through the control panel applet. No joy. It denied ever knowing about any resolution beyond VGA, so I reinstalled the video drivers. Joy, I was back to the display I wanted.

But wait! Now SystemWorks was unhappy. It said it couldn't load some component and I should restart it or reinstall SystemWorks.

So I followed the stupid advice and restarted — no use — and then reinstalled. Guess what? Back to VGA resolution! OK, I tried to reinstall the video drivers ... no use, the system

MARK GIBBS

didn't want to find them this time. So I uninstalled Norton SystemWorks but that didn't help so, OK, back to the original disk that came with my Hewlett Packard Pavilion 8485Z. I inserted the CD, rebooted and selected the restore option and whirr-clunk-clunk ... whoa! Who said that my registry would be replaced?

OK, I could deal with that, but now network features weren't working so I had to reinstall TCP/IP and I couldn't find the network information folder in my filing system because it was misfiled and then I had to re-install the NetWare services but this time I got an error message that I needed a new version of NETDI.DLL and that I should check out a Microsoft technical document but that didn't point me to a downloadable copy of the file but rather said that I needed to talk to MS Tech support who would send me the file and charge me for it but then credit me back, but who wants to spend all Saturday hanging on for support so I searched for other technical support documents and discovered that there was some kind of issue with this DLL if Microsoft NetWare support was installed, so I removed that and then NetWare installed OK and then I found that Microsoft Office 2000 would no longer work so I had to reinstall that but when that was done it asked for the CD key to allow access but I couldn't find that so I had to call Microsoft Tech Support and they said "No trouble, please hold" and after 15 minutes I realized that the key was written on the CD anyway so ...

Fixing everything that went wrong took a total of 36 hours. Oh, and the virus? A false positive caused, I think, by a macro fragment left after the document's original author cleaned out the Jerk virus. This explains the hairstyle: If I didn't wear my hair so short, I'd have been ripping it out by the handful.
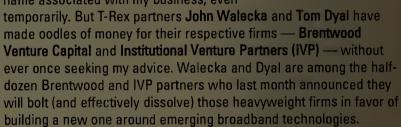
Styling tips to nwcolumn@gibbs.com.

PAUL MCNAMARA

Time for a pop quiz: Silicon Valley's newest Internet venture capital firm is code-named T-Rex after:

a) The British rock band **T-Rex** from the '60s and '70s with its one hit "Bang a Gong."

b) **Rex Trailer,** host of "Boomtown," a kiddie show that kept young Buzz glued to the family black-and-white way back when.

c) **Tyrannosaurus Rex,** who just like the first two was once a hot property but is now extinct.

Those who answered "C" get a gold star.

Personally, I would never want a dinosaur name associated with my business, even temporarily. But T-Rex partners **John Walecka** and **Tom Dyal** have made oodles of money for their respective firms — **Brentwood Venture Capital** and **Institutional Venture Partners (IVP)** — without ever once seeking my advice. Walecka and Dyal are among the half-dozen Brentwood and IVP partners who last month announced they will bolt (and effectively dissolve) those heavyweight firms in favor of building a new one around emerging broadband technologies.

"The new firm is going to focus on everything around the broadband Internet," Dyal says. "Enabling silicon for the infrastructure, equipment in the infrastructure, services riding on top of that infrastructure, and content and media that are feeding both consumers and businesses."

These guys have already proven they know how to bang a gong, too. Brentwood has invested in and nurtured such "name" companies as Apple, Sybase and Xylan. IVP has ponied up for Juniper, Seagate, Excite and Ask Jeeves (a new Buzz favorite). Both sunk dough into Bay Networks early on.

T-Rex expects to start doling out a $500 million initial fund any day now ... so don't be shy about dusting off those start-up plans.

"Five years ago in our industry, the talent pools really were in either Silicon Valley or Boston and traditionally came out of either the semi-conductor companies or the minicomputer business," Walecka says. "With this move toward a converged network and the importance of voice ... we're actively scouring the country looking for talented people who have spent their careers in places like Nortel, Lucent or TelLabs."

He did not mention trade magazines, but I'm sure it was an oversight.

"We're on the front end of a tidal wave and those who are thinking boldly about new ideas really have a chance to change the landscape over the next decade," Walecka adds. "It's all driven by this broadband infrastructure, and the networking world is still the focal point for what's going to come later."

Mail.com's recent $20 million acquisition of **The Allegro Group** was a tiny transaction by Internet standards, barely worth mentioning were it not for this fact: Seeds of the deal were sown right here in a *Network World* meeting room.

Last fall, Allegro was making an honest if not spectacular living by outsourcing e-mail services to small and midsize companies. Marketing executive **Richard Bliss** dropped by to pitch the company's latest features, but I steered him into a lengthy discussion about the growing problem of junk e-mail attachments: "dancing baby" video clips, holiday e-cards, funny executables, etc.

To keep a long story from running off this page, the chat prompted Bliss and Allegro to launch a new service called MailZone, which lets Allegro customers filter this junk out of their mail streams. MailZone quickly became such a big hit for Allegro that a number of suitors and venture capitalists came calling, with Mail.com ultimately winning out.

"Honestly, it was me talking to you in that meeting," Bliss told Buzz last week. Bliss also said he just passed papers on a new house bought with his share of the deal's proceeds.

"You're on the wrong end of this business," he added.

Buzz went home and had a good cry.

Help cheer up McNamara by sending him your Internet news tips and gossip at (508) 820-7471 or buzz@nww.com.
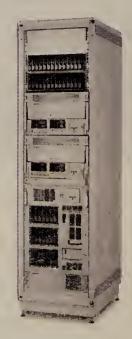
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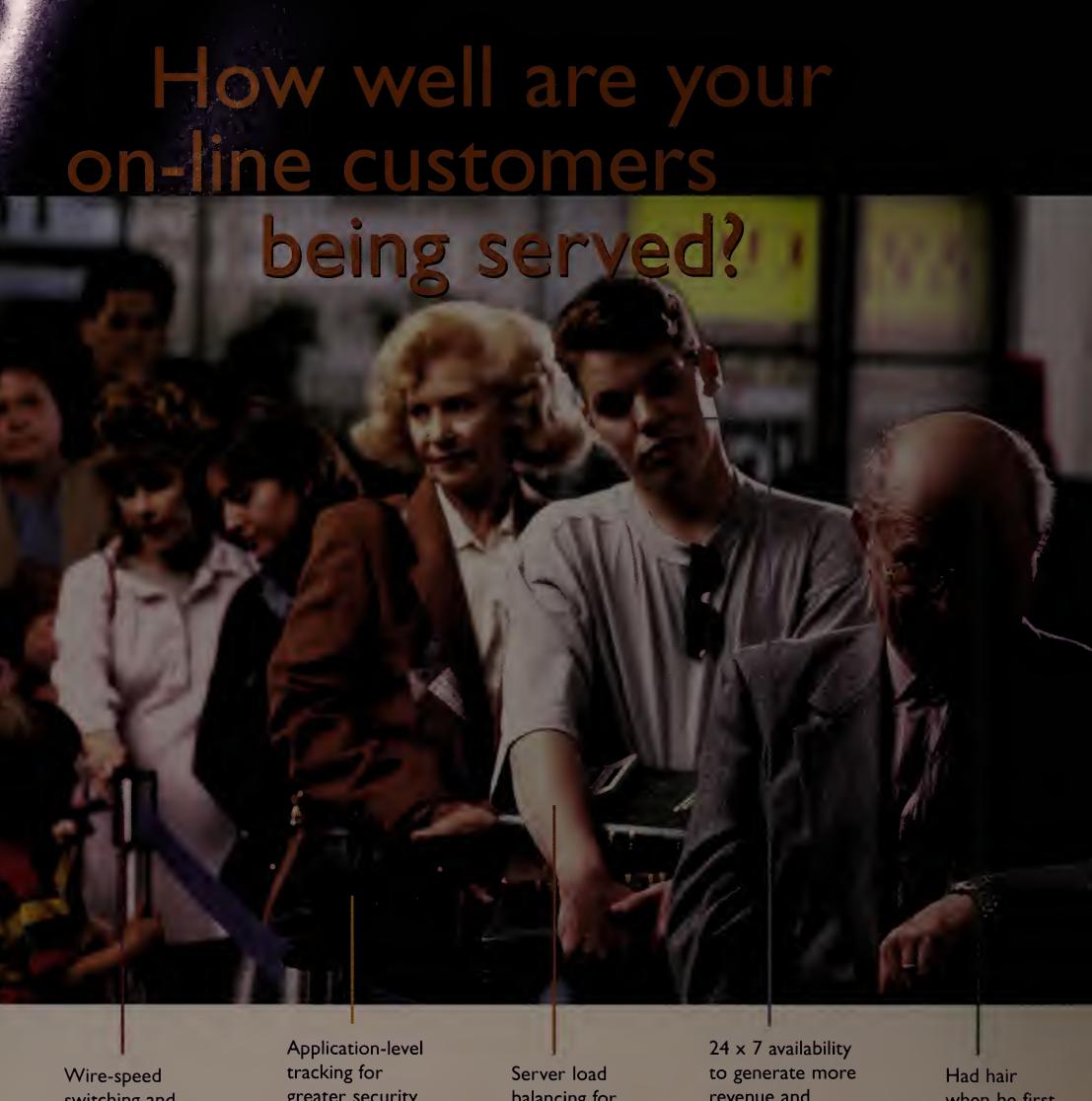
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